STANBURY
TRAFFIC PLANNING
TRAFFIC, PARKING & TRANSPORT CONSULTANTS

TRAFFIC & PARKING IMPACT ASSESSMENT

PROPOSED MANUFACTURED HOUSING ESTATE
171 – 187 WARRAL ROAD
WEST TAMWORTH

PREPARED FOR STIMSON URBAN & REGIONAL PLANNING
OUR REF: 23-186-rep-1

12 SEPTEMBER 2024

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APPENDICES

1. INTRODUCTION

1.1 Scope of Assessment

Stanbury Traffic Planning has been commissioned by Stimson Urban & Regional Planning to prepare a Traffic & Parking Impact Assessment to accompany a Development Application to be lodged with Tamworth Regional Council. The Development Application seeks consent for demolition of existing structures and the construction of a manufactured housing estate. The estate is planned to accommodate 158 lots, being serviced by a series of internal roads, connecting with Warral Road in the north-eastern corner of the site.

This aim of this assessment is to investigate and report upon the potential traffic and parking consequences of the applications and to recommend appropriate ameliorative measures where required. This report provides the following scope of assessment:

- Section 1 provides a summary of the site location, details, existing and surrounding land-uses;
- Section 2 describes the proposed development;
- Section 3 assesses the adequacy of the proposed site access arrangements, parking provision, internal circulation and servicing arrangements with reference to relevant specifications;
- Section 4 assesses the existing traffic, parking and transport conditions surrounding and servicing the subject development site including a description of the surrounding road network, traffic demands, operational performance and available public transport infrastructure; and
- Section 5 estimates the projected traffic generating ability of the proposed development and assesses the ability or otherwise of the surrounding road network to be capable of accommodating the altered demand in a safe and efficient manner.

The report has been prepared pursuant to State Environmental Planning Policy (Infrastructure & Transport) 2021.

1.2 Reference Documents

Reference is made to the following documents throughout this report:

- Transport for NSW's *Guide to Traffic Generating Developments*;
- NSW Government's *Local Government (Manufactured Home Estates, Caravan Parks, Camping Grounds and Movable Dwellings) Regulation 2021*;
- Tamworth Regional Council's *Tamworth Regional Development Control Plan 2010*;
- Tamworth Regional Council's *Tamworth Regional Local Environmental Plan 2010*;
- Australian Standard for *Parking Facilities Part 1: Off-Street Car Parking* (AS2890.1:2004); and
- Australian Standard for *Parking Facilities Part 1: Off-Street Parking for People with Disabilities* (AS2890.6:2009).

Architectural plans have been prepared by Integrated Design Group and should be read in conjunction with this report, reduced copies of a selection of which are included as **Appendix 1** for reference.

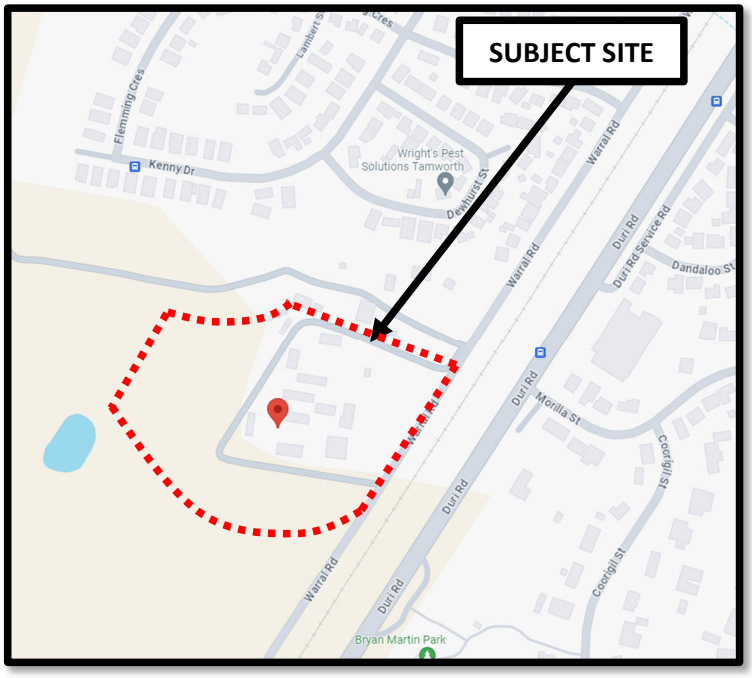
1.3 Site Details

1.3.1 Site Location

The subject site is located on the western side of Warral Road, approximately 330m to the south of Goodwin Street, West Tamworth.

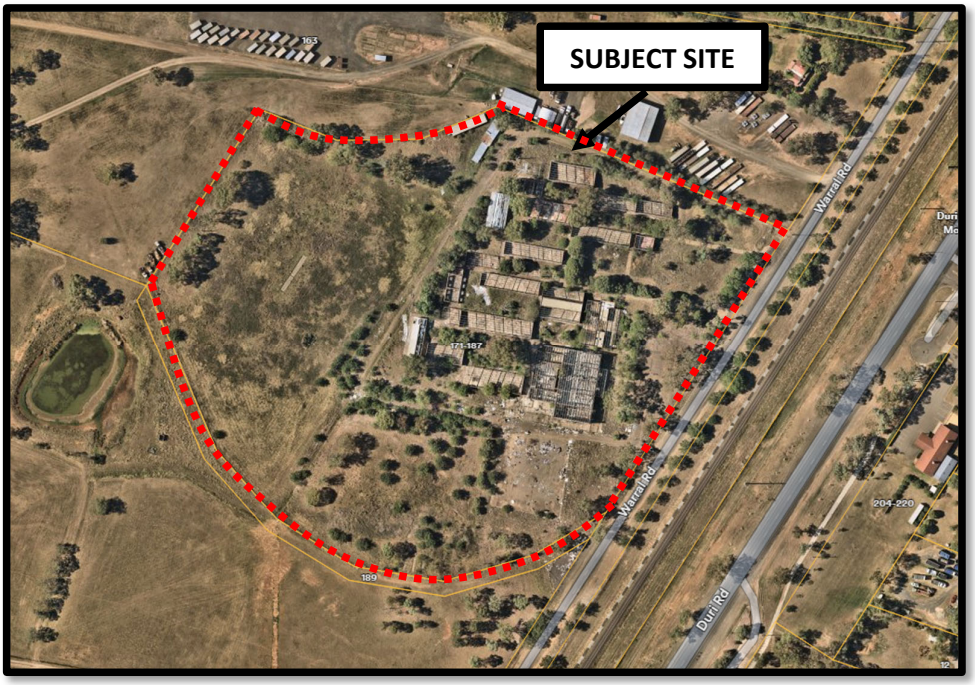
The site location is illustrated overleaf within a local and aerial context by **Figure 1** and **Figure 2** overleaf, respectively.

FIGURE 1
SITE LOCATION WITHIN A LOCAL CONTEXT



Source: Google Maps (accessed 16/02/24)

FIGURE 2
SITE LOCATION WITHIN AN AERIAL CONTEXT



Source: Nearmap (image date: 26/01/24)

1.3.2 Site Description

The allotment within which the Estate is proposed to be contained provides a real property address of Lot 1 within DP 611738 and a street address of 171 – 187 Warral Road, West Tamworth.

This allotment provides an irregular shaped parcel of land with an approximate frontage of 183m to Warral Road and a total lot area in the order of 6.17 hectares.

1.3.3 Existing Site Use

The subject site contains existing sheds within the central portion of the site which are not currently occupied.

1.3.4 Surrounding Uses

The site is adjoined by rural farming properties to the north, south and west of the site.

Detached residential dwellings occupy land to the east and opposite side of Warral Road, the railway line and Duri Road.

Hillvue Public School is situated approximately 700m to the north-east of the site, fronting and serviced by Hillvue Road.

Tamworth regional centre is situated approximately 4.5km to the north-east of the site.

2. PROPOSED DEVELOPMENT

2.1 Built Form

The manufactured housing estate is proposed to comprise a total of 158 dwelling sites in conjunction with ancillary recreation and community facilities such as a community centre, a lawn bowling green, community garden and playground.

Each dwelling site is to provide minimum dimensions of 9 metres x 20 metres, being capable of accommodating a mixture of one, two and three bedroom dwellings being serviced by a single parking space.

The recreation and community facilities are for the sole use of the estate residents, thereby not being open to the public.

The estate is to be serviced by a series of internal access roads, providing direct connectivity to the housing sites, the community and recreation facilities and the on-site parking areas.

Vehicular connectivity between the estate and the adjoining public road network is proposed via a single roadway, connecting with Warral Road via a driveway situated approximately 18m to the south of the northern site boundary.

3. SITE ACCESS & INTERNAL CIRCULATION

3.1 Vehicular Access

Vehicular connectivity between the estate and the adjoining public road network is proposed to be a provided via a single 17m wide access driveway, intersecting Warral Road approximately 18m to the south of northern site boundary.

The following subsections of this report provide an assessment of the suitability or otherwise of the proposed vehicular access arrangements with respect to access design and the provision of sight distance.

3.1.1 Access Design

The estate is proposed to be serviced by a single access roadway, providing a pavement width of 17m at the site boundary, prior to reducing to 11m some 8 inside the property, at which point it provides 5m wide ingress and egress lanes, being separated by a 1m wide raised concrete median.

Local Government (Manufactured Housing Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2021 provides subdivision standards for roads relevant to the subject estate. Clause 20(2) of the Regulation provides the following:

> *In the case of a divided road, the width of the sealed portion of the side of the median strip must be at least 5 metres.*

The proposed divided ingress and egress roadway both have a width of 5m and accordingly suitably complies with *Local Government (Manufactured Housing Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2021*.

3.1.2 Sight Distance

Warral Road provides a consistent horizontal and vertical alignment within the vicinity of the proposed site access roadway. Motorists are accordingly provided with an acceptable level of sight distance (in excess of 200m) between the frontage road and the proposed site access roadway, based on the sign posted speed limit of 50km/h applicable in the vicinity of the site access.

3.2 Pedestrian Access

The estate design provides for dedicated 1.5m wide internal pedestrian pathways adjacent to both sides of the site access roadway and connecting circular periphery roadway.

3.3 Internal Road Design

Clause 21 of *Local Government (Manufactured Housing Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2021* provides the following standards for widths of roads relevant to the subject estate:

(1) The width of the road reserve must be at least:
(a) 8.5 metres for a major access road, and
(b) 6 metres for a minor access road.

(2) The width of a sealed portion of an access road must be at least:
(a) 6 metres for a major access road, and
(b) 4 metres for a minor access road.

(3) If a minor access road exceeds 80 metres in length, a passing bay or bays must be provided within the road reserve.

(4) Passing bays must be provided at intervals of not more than 100 metres.

(5) The width of the sealed portion of an access road at a passing or parking bay be at least –
(a) 8.5 metres for a major access road, and
(b) 6 metres for a minor access road.

The previously presented estate access road is to provide connectivity to an internal private road network, providing as series of differing designs depending on their functional order, as follows:

- The primary circular periphery access road is proposed to provide a 7m carriageway within a variable road reserve width between 10m – 14m; and

- Minor internal access roads are proposed to provide a pavement and road reserve width of 6m.

It is considered reasonable that passing bays within minor access roads are not required, as the minor access road pavement width of 6m can facilitate travel in both directions.

3.4 Parking Provision

The estate is proposed to provide a series of at-grade visitor parking areas adjacent to the community centre building and the community garden, being access via the internal road network, containing a total of 42 spaces, comprising four disabled spaces.

Formalised resident parking is proposed to be contained within each dwelling site.

The following sub-sections of this report provides an assessment of the proposed visitor and resident parking provision with respect to the relevant established requirements.

3.4.1 Visitor Parking

To undertake an assessment of the suitability of the proposed visitor parking provision of 42 spaces, reference is made to Clause 23 of *Local Government (Manufactured Housing Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2005* which provides the following standards for visitor parking relevant to the subject estate:

(1) A manufactured home estate must contain at least the following number of visitor parking spaces-
- *(a) For a manufactured home estate containing no more than 35 sites – 8 spaces,*
- *(b) For a manufactured home estate containing more than 35 sites, but no more than 70 sites – 12 spaces,*
- *(c) For a manufactured home estate containing more than 70 sites, but no more than 105 sites – 16 spaces,*
- *(d) For a manufactured home estate containing more than 105 sites – 20 spaces plus 1 additional space for every 7 sites above 140 sites.*

The estate is accordingly required to provide the following visitor parking provision:

20 + (158 - 140)/7 = 22.6 (adopt 23) visitor parking spaces

The visitor parking provision of 42 spaces exceeds the relevant requirements of *Local Government (Manufactured Housing Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2021* and accordingly, is considered satisfactory.

3.4.2 Disabled Parking

To undertake an assessment of the suitability of the proposed disabled visitor provision of four spaces, reference is made to Clause 24 of *Local Government (Manufactured Housing Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2021* which provides the following standards for visitor parking relevant to the subject estate:

(2) A manufactured home estate must contain -
- *(a) At least 1 visitor parking space for people with a disability (a disabled parking space), or*
- *(b) If the manufactured home estate contains 100 sites, or more – at least additional disabled parking spaces for -*
  - *(i) The first 100 sites, and*
  - *(ii) Every further 100 sites, and*
  - *(iii) A remaining part, if any, of 100 sites.*

The estate is accordingly required to provide the following parking provision of two disabled parking spaces.

The disabled parking provision of four spaces therefore exceeds the relevant requirements of *Local Government (Manufactured Housing Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2021* and accordingly, is considered satisfactory.

3.4.3 Resident Parking

Formalised resident parking is proposed to be contained within the dwelling sites via the provision of a single at-grade parking space.

Local Government (Manufactured Housing Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2021 Clause 45(2) specifies the following for manufactured housing estates:

> *If there is no carport or garage on the dwelling site, the site must contain an area-*
> *(a) With a minimum dimension of 6 metres by 3 metres, and*
> *(b) Accessible from an access road, and*
> *(c) Used for car parking*

In addition to the abovementioned specification, the DCP 2010 provides the following locally sensitive requirements for manufactured home estate:

> *1 space per site*

Application of the abovementioned *Local Government (Manufactured Housing Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2021 and* DCP 2010 rate to the development both result in a minimum requirement of 158 resident parking spaces. The indicative dwelling type designs are capable of complying with the above parking requirement of 158 resident parking spaces accordingly, are considered to be satisfactory.

3.5 Internal Circulation and Manoeuvring

Upon entry to the site, vehicles will travel in a forward direction from the estate access road to link with the connecting major circular periphery road and intersecting minor access roads.

The abovementioned internal roads are proposed to provide direct or indirect access to visitor parking areas, which comprise a series of standard 90-degree angled parking rows being serviced either by an adjacent access road or via a dedicated parking aisle, separate to the internal roadways.

3.5.1 Visitor Parking

Clause 23 of *Local Government (Manufactured Housing Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2021* provides the following design standards for visitor parking relevant to the subject estate:

> *(3) Each parking is to have, at minimum, dimensions of:*
> *(a) For angle parking – 5.4 metres by 2.5 metres, or*

(b) Otherwise – 6.1 metres by 2.5 metres

The angled visitor parking spaces are to provide dimensions of 5.4m by 2.5m. The parking arrangements are accordingly compliant with or exceed the relevant requirements of *Local Government (Manufactured Housing Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2021* and are therefore, considered satisfactory. Such parking space dimensions are also noted to be appropriately compliant with the relevant requirements of AS2890.1:2004.

Safe and efficient internal manoeuvring and parking space accessibility is anticipated to result, taking into consideration the above compliance with the relevant *Local Government (Manufactured Housing Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2021* specifications. Notwithstanding this, in order to further demonstrate the suitability of the abovementioned arrangement and internal passenger vehicle manoeuvrability within the on-site parking areas and throughout the internal roadways generally, this Practice has prepared a number of swept path plans which are included as **Appendix 2**. The turning paths provided on the plans have been generated using Autoturn software and derived from B85 and B99 vehicle specifications provided within AS2890.1:2004.

Section B4.4 of AS2890.1:2004 states the following with regard to the use of templates to assess vehicle manoeuvring:

'Constant radius swept turning paths, based on the design vehicle's minimum turning circle are not suitable for determining the aisle width needed for manoeuvring into and out of parking spaces. Drivers can manoeuvre vehicles within smaller spaces than swept turning paths would suggest.'

It would therefore appear that whilst the turning paths provided within AS2890.1:2004 can be utilised to provide a 'general indication' of the suitability or otherwise of internal parking and manoeuvring areas, vehicles can generally manoeuvre more efficiently than the paths indicate. Notwithstanding this, the swept path plans illustrate that passenger vehicles can manoeuvre throughout the visitor parking areas and enter and exit the most difficult passenger vehicle parking spaces.

In consideration of this and the above discussion, the proposed internal passenger vehicle circulation arrangements are considered to be satisfactory.

3.5.2 Disabled Parking

Clause 24 of *Local Government (Manufactured Housing Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2021* states that disabled parking must be provided in accordance with AS2890.6:2022 (being the relevant Standard pertaining to disabled parking), which provides the following minimum dimensions:

- 5.4m long; and
- 2.4m wide (plus a 2.4m wide adjoining shared area).

The designated distance parking spaces provide minimum dimensions of 2.5m x 5.4m, with adjacent 2.5m wide shared areas, thereby exceeding the minimum requirements of AS2890.6:2022 and accordingly the *Local Government (Manufactured Housing Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2021*.

3.5.3 Resident Parking

Local Government (Manufactured Housing Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2021 Clause 45(2) (b) specifies the following for minimum dimensions for resident parking within manufactured housing estate:

- Parking space width = 3m; and
- Parking space length = 6m.

The abovementioned resident parking space dimensions comply with the relevant requirements of Local Government (Manufactured Housing Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2021 and accordingly, are considered to be satisfactory.

3.5.4 Site Servicing

It is expected that the housing estate will generate a requirement for regular refuse collection and minor deliveries associated with the community and recreation infrastructure. It is expected that such activity will be undertaken by private contractors, who will utilise vehicles which are capable of negotiating the internal road network up and including Medium Rigid Vehicles (MRVs).

It is also possible that the site will need to accommodate fire bridge vehicles during emergencies.

To demonstrate the ability or otherwise of the abovementioned service vehicles to access, manoeuvre throughout and exit the site, a series of swept path plans have been prepared, copies of which are contained within **Appendix 2** for reference. These plans illustrate that the abovementioned service vehicles are able to access, circulate throughout the internal road network and exit the site in a forward direction in a safe and efficient manner.

4. EXISTING TRAFFIC CONDITIONS

4.1 Surrounding Road Network

The following provides a description of the road network surrounding the subject site:

- **Warral Road** performs a collector road function under the care and control of Tamworth Council, providing a north-south alignment between Stewart Avenue in the north and Duri-Winton Road / Railway Avenue in the south.

  Warral Road provides an approximate pavement width of 7m facilitating one lane of travel in both directions between unsealed road shoulders. Traffic flow within Warral Road is governed by a sign posted speed limit of 50km/h to the north of the site, within the vicinity of residential developments. A rural area speed limit of 100km/h applies to the south of the site.

  At its northern extremity, Warral Road forms a T-junction with Stewart Avenue operating under 'Give-Way' signage control with Warral Road performing the priority route. Warral Road continues to the north to form Sale Street, prior to linking with Gunnedah Road.

  Between the site and Stewart Street, Warral Road forms a series of T-junctions with roads extending to the west in Goodwin Street, Kenny Drive, Green Street, Tingira Avenue, Bourne Street, Cossa Street and MacGregor Street operating under major / minor priority control with Warral Road performing the priority route in each instance.

  Further to the above, Warral Road forms a T-junction with Robert Street extending to the east, operating under 'Give-Way' signage control with Robert Street performing the priority route.

  At its southern extremity, Warral Road forms a T-junction with Duri-Winton Road / Railway Avenue operating under major / minor priority control with Warral Road and Railway Avenue performing the priority routes.

- **Robert Street** performs a collector road function under the care and control of Tamworth Council, providing an east-west alignment between Kathleen Street in the east and Warral Road in the west.

  Immediately to the east of Warral Road, Robert Street provides an approximately 9m wide pavement, providing one through lane of traffic in each direction. A level railway crossing, complete with operating boom gates governs directional traffic flow some 20m to the east of Warral Road.

  A further 20m to the east, Robert Street forms an intersection with Duri Road operating under single lane circulating roundabout control.

  To the east of Duri Street, Robert Street forms a dual carriageway facilitating one lane of travel in both directions in conjunction with unrestricted parking

along both kerb alignments. Traffic flow within Robert Street is governed by a local area speed limit of 50km/h.

- **Duri Road** performs a Regional Road function under the care and control of Tamworth Council with funding for upgrades and maintenance being shared with TfNSW. Duri Road provides a north-south alignment between Oxley Highway / Stewart Avenue in the north and Werris Creek Road / Gowrie Road in the south.

  In the vicinity of the subject site, Duri Road provides an approximate pavement width of 9m facilitating one lane of travel in both directions between unsealed shoulders.

  Traffic flow within Duri Road in the vicinity of the site is governed by a sign posted speed limit of 60km/h.

  To the north, Duri Road forms a T-junction with Oxley Highway operating under single lane circulating roundabout control.

- **Oxley Highway** performs a State Road function under the care and control of TfNSW, providing an east-west connection between West Tamworth in the east and Gunnedah in the west.

  In the vicinity of West Tamworth, Oxley Highway provides a divided carriageway facilitating two lanes of traffic in each direction separated by a raised median.

  Oxley Highway is governed by a sign posted speed limit of 60km/h within West Tamwroth; however, a 40km/h school zone speed limit applies during prescribed school start / finish times associated with Westdale Public School.

4.2 Existing Traffic Volumes

Staff of this Practice have undertaken peak hour traffic surveys at the junction of Warral Road and Goodwin Street to the north of the site, in order to accurately ascertain existing traffic demands within the immediate precinct.

Surveys were undertaken between 7:00am – 10:00am and 3:00pm – 6:00pm on the 29th February 2024.

Figure 3 overleaf provides a summary of the surveyed peak hour intervals of traffic flows at the subject intersection including a morning peak hour which has been identified as 7:00am — 8:00am (AM Peak) and 3:00pm – 4:00pm (PM Peak), whilst full details are contained within **Appendix 3**.

FIGURE 3
EXISTING WEEKDAY COMMUTER PEAK HOUR TRAFFIC VOLUMES
JUNCTION OF WARRAL ROAD AND GOODWIN STREET

Figure 3 indicates the following:

- Warral Road primarily accommodates directional traffic demands of less than 100 vehicles during weekday peak hours; and
- Goodwin Street accommodates direction traffic demands less than 30 vehicles during weekday peak hours.

4.3 Existing Road Network Operation

4.3.1 Intersection Performance

The surveyed public road intersections have been analysed utilising the SIDRA computer intersection analysis program in order to objectively assess the operation of the nearby public road network.

SIDRA is a computerised traffic arrangement program which, when volume and geometrical configurations of an intersection are imputed, provides an objective assessment of the operation efficiency under varying types of control (i.e. signs, signal and roundabouts). Key indicators of SIDRA include level of service where results are placed on a continuum from A to F, with A providing the greatest intersection efficiency and therefore being the most desirable by TfNSW.

SIDRA uses detailed analytical traffic models coupled with an iterative approximation method to provide estimates of the abovementioned key indicators of capacity and performance statistics. Other key indicators provided by SIDRA are average vehicle delay, the number of stops per hour and the degree of saturation. Degree of saturation is the ratio of the arrival rate of vehicles to

the capacity of the approach. Degree of saturation is a useful and professionally accepted measure of intersection performance.

SIDRA provides analysis of the operating conditions that can be compared to the performance criteria set out in **Table 1** below (being the TfNSW method of calculation of Level of Service).

TABLE 1 LEVEL OF SERVICE CRITERIA FOR INTERSECTIONS PRIORITY CONTROLLED INTERSECTIONS		
Level of Service	**Average Delay per Vehicle (secs/veh)**	**Expected Delay**
A	Less than 14	Good
B	15 to 28	Acceptable delays and spare capacity
C	29 to 42	Satisfactory
D	43 to 56	Near capacity
E	57 to 70	At capacity and requires other control mode
F	> 70	Unsatisfactory and requires other control mode

The existing conditions have been modelled utilising the peak hour traffic volumes presented within **Figure 3**.

Table 2 below provides a summary of the SIDRA output data whilst more detailed summaries are included as **Appendix 4**.

TABLE 2 SIDRA OUTPUT – EXISTING WEEKDAY PEAK HOUR PERFORMANCE JUNCTION OF WARRAL ROAD AND GOODWIN STREET		
	AM PEAK (7:00AM-8:00AM)	**PM PEAK (3:00PM-4:00PM)**
Warral Road South Approach		
Average Vehicle Delay	5.6	5.5
Degree of Saturation	0.04	0.01
Level of Service	A	A
Warral Road North Approach		
Average Vehicle Delay	5.6	5.5
Degree of Saturation	0.01	0.04
Level of Service	A	A
Goodwin Street Approach		
Average Vehicle Delay	5.8	5.7
Degree of Saturation	0.02	0.01
Level of Service	A	A
Total Intersection		
Average Vehicle Delay	5.8	5.7
Degree of Saturation	0.04	0.04
Level of Service	A	A

Table 2 indicates that the junction of Warral Road and Goodwin Street provides a level of service of 'A', representing good conditions with spare capacity.

4.3.2 Warral Road

Reference is made to TfNSW's *Guide to Traffic Generating Developments* to undertake an assessment of the operational performance of Warral Road in the immediate vicinity of the subject site. **Table 3** below provides the level of service assigned to peak hour directional traffic flow within the frontage roads based on the abovementioned traffic surveys and criteria specified within the *Guide to Traffic Generating Developments*.

TABLE 3
WARRAL ROAD DIRECTIONAL TRAFFIC FLOW (ADJACENT TO THE SITE)
LEVEL OF SERVICE

	AM PEAK (7:00AM-8:00AM)	PM PEAK (3:00PM-4:00PM)
Northbound Traffic Flow		
Volume	108	36
Level of Service	A	A
Southbound Traffic flow		
Volume	13	63
Level of Service	A	A

Table 3 indicates that both directional traffic flow within Warral Road is provided with a level of service A during weekday commuter peak periods, representing a level in the zone of free flow, where drivers have the freedom to select their desired speed and manoeuvre.

4.4 Public Transport

4.4.1 Buses

Bus Route 433 (Tamworth to South Tamworth Loop) operates along Robert Street within the vicinity of the site. Bus Route 437 provides the closest stop at approximately 1.3km walking distance (19-minute walk) to the northeast of the site.

4.4.2 Heavy Rail

Tamworth Railway Station is situated approximately 4.8km to the north-east of the site, connection to which is provided by the abovementioned Route 433 bus route.

Tamworth Railway Station provides services along the 223 (Central to Armidale) Line which provides two daily services.

4.4.3 Pedestrians / Cyclists

Level grassed verges are provided along both sides of Warral Road facilitating appropriate pedestrian access, given the rural nature of the abutting land-uses.

5. PROJECTED TRAFFIC CONDITIONS

5.1 Traffic Generation Rates

Traffic generation rates for various land-uses have been established through extensive surveys undertaken throughout NSW and published within their *Guide to Traffic Generating Developments*. Whilst the manufactured housing estate does not specifically form seniors housing, this Practice has been advised that the estate is to be aimed at seniors and accordingly, the traffic generating potential of the development has been assessed with respect to such occupants.

TfNSW's *Guide to Traffic Generating Developments* publication specifies that housing for seniors generates an average of 0.4 peak hour vehicle trips per dwelling.

5.2 Traffic Generation

The proposed estate involved an estate containing 158 housing sites. The proposed estate is accordingly estimated to generate in the order of 64 peak hour vehicle trips to and from the site.

5.3 Trip Distribution and Projected Traffic Volumes

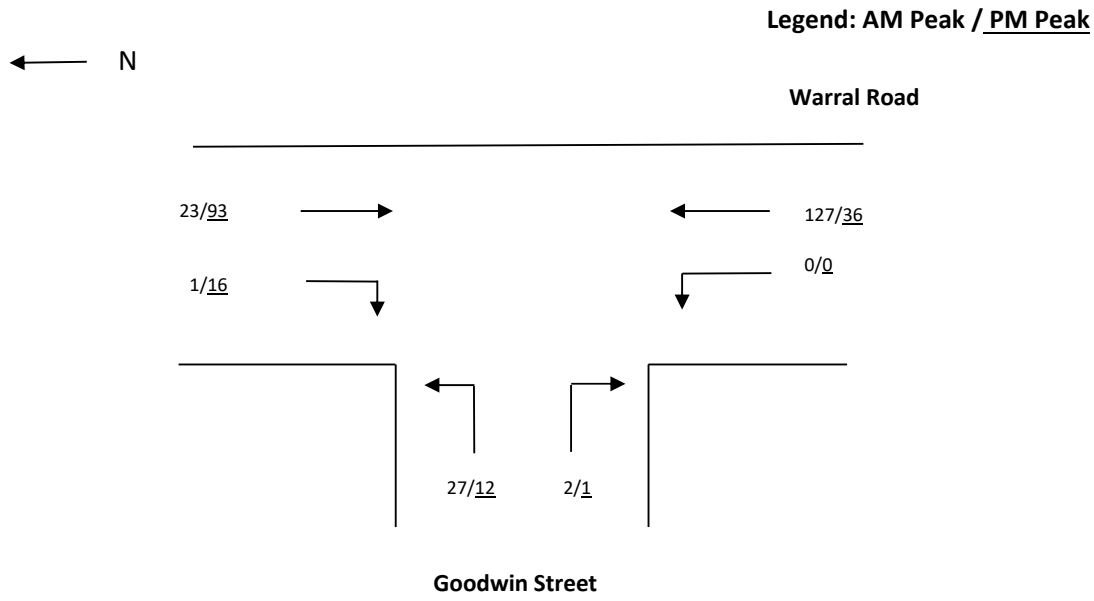
The development generated trips are likely to primarily comprise egress movements during the morning peak periods and ingress movements during the evening periods. For the purposes of this assessment, the development is therefore projected to generate 13 ingress and 51 egress movements during the morning peak hour and 51 ingress and 13 egress movements during the evening peak hour.

The abovementioned trips have been assigned to the surrounding road network as follows, primarily based on existing traffic distributions surveyed and presented within **Figure 3**:

- 90% of vehicles travel to / from the north via Warral Road; and
- 10% of vehicles travel to / from the south via Warral Road.

The projected peak hour traffic volumes at the junction of Warral Road and Goodwin Street have been formulated by adding the abovementioned traffic generation and trip assignment to the existing demands presented within **Figure 3**. **Figure 4** overleaf provides an estimation of the future traffic demands at the nearby public road intersections.

FIGURE 4
PROJECTED WEEKDAY COMMUTER PEAK HOUR TRAFFIC VOLUMES
WARRAL ROAD AND GOODWIN STREET



5.4 Traffic Impacts

5.4.1 Projected Intersection Performance

The nearby junction of Warral Road and Goodwin Street have been modelled in order to estimate the likely impact on traffic safety and efficiency utilising the projected traffic volumes illustrated within **Figure 4**. A summary of the most pertinent results is indicated within **Table 4** overleaf whilst more detailed summaries are provided within **Appendix 5**.

TABLE 4 SIDRA OUTPUT – EXISTING AND PROJECTED WEEKDAY PEAK HOUR PERFORMANCE JUNCTION OF WARRAL ROAD AND GOODWIN STREET				
	Existing		Projected	
	AM	PM	AM	PM
Warral Road South Approach				
Average Vehicle Delay	5.6	5.5	5.6	5.5
Degree of Saturation	0.04	0.01	0.07	0.02
Level of Service	A	A	A	A
Warral Road North Approach				
Average Vehicle Delay	5.6	5.5	5.6	5.5
Degree of Saturation	0.01	0.04	0.01	0.06
Level of Service	A	A	A	A
Goodwin Street Approach				
Average Vehicle Delay	5.8	5.7	6.0	5.9
Degree of Saturation	0.02	0.01	0.02	0.01
Level of Service	A	A	A	A
Total Intersection				
Average Vehicle Delay	5.8	5.7	6.0	5.9
Degree of Saturation	0.04	0.04	0.07	0.06
Level of Service	A	A	A	A

Table 4 indicates that the additional traffic generated by the proposed development is not projected to have noticeable impacts on the operation of the junction of Warral Road and Goodwin Street, with only minor alterations projected with respect to delay and degree of saturation. In this regard, the current intersection level of service is projected to remain unaltered, representing acceptable operation with spare capacity.

5.4.2 Overall Road Network Performance

The development has been projected to generate up to 64 vehicle movements per hour during commuter peak periods. This equates to approximately one additional vehicle movement every minute during commuter peaks, which is not projected to, in itself, result in any unreasonable impacts on the existing operational performance of the surrounding local road network. In this regard, traffic demands within Warral Road adjacent to the site are expected to continue to be within the environmental goal peak hour volume of less than 200 vehicles during weekday commuter peaks for local roads.

Whilst it is acknowledged that vehicle queues have been observed to occur within Warral Road, Duri Road and Robert Street during the closure of the boom gates governing the level railway crossing to the north of the site, such queues dissipate quickly following the raising of the boom gates. The number of trains operating along the railway line are infrequent (with only a small number of regular public and freight services), thereby resulting in impedance to public road traffic flow not being unreasonable. Motorists have accordingly been observed to be able to (and are expected to continue to be able to) access and vacate the precinct with a good level of safety and efficiency, despite the operation of the level crossing.

In consideration of the above, the impact of the development is most likely to be a result of the safety and efficiency with which motorists are capable of entering and exiting the development. The low traffic demands within Warral Road in conjunction with the good sight distance provisions between the frontage road and the driveway location is such that it is envisaged that motorists will be capable of entering and exiting the site in a safe and efficient manner.

6. CONCLUSION

This report assesses the potential parking and traffic implications associated with a proposed manufactured home estate at 171 – 187 Warral Road, West Tamworth. Based on this assessment, the following conclusions are now made:

- The estate is to be serviced by an internal road network, connecting with Warral Road via a proposed access driveway situated in the north-eastern corner of the site;

- The proposed visitor parking provision is considered to be satisfactory with respect to the relevant requirements of *Local Government (Manufactured Home Estates, Caravan Parks, Camping Grounds and Movable Dwellings) Regulation 2021*;

- The proposed resident parking provision is considered to be satisfactory with respect to the relevant requirements of Local Government (Manufactured Housing Estates, Caravan Parks, Camping Grounds and Moveable Dwellings) Regulation 2021 and *Tamworth Regional Development Control Plan 2010*;

- The internal vehicle circulation arrangements are capable of providing for safe and efficient internal manoeuvring;

- The surrounding road network operates with a good level of service during peak periods;

- The subject development has been assessed to generate up to 64 peak hour vehicle trips to and from the subject site; and

- The surrounding road network is considered to be capable of accommodating the additional traffic projected to be generated by the subject development.

It is considered, based on the contents of this report and the conclusions contained herein, there are no parking or traffic related issues that should prevent approval of the subject application. This action is therefore recommended to Council.

APPENDIX 1

LEGEND

- LAWN
- GARDEN BEDS
- PATH
- ROAD
- PAVING
- SITE BOUNDARY
- TREES TO BE REMOVED
- TREES TO BE RETAINED
- BENCH SEATING
- PICNIC TABLE SEATING
- ROADSIDE FENCE HARDWOOD POST AND COLORBOND

ISSUE	DATE	REVISION

NOTE DO NOT SCALE FROM DRAWING. USE FIGURED DIMENSIONS ONLY.
CHECK ALL DIMENSIONS ON SITE BEFORE ANY MANUFACTURE OR CONSTRUCTION

FILE NAME
NBL_Tamworth_240320.vwx

PROJECT
Workforce Housing

ADDRESS
171-187 Warral Rd,Tamworth,Lt 1/DP611738

CLIENT
Warral Developments

DRAWING
Overall Site

Nicholas Bray Landscapes

PROJECT #
NBL_Tamworth_2401

DATE	20/3/24	DWG #	REV
SCALE @ A1	1:650	**L1**	
DRAWN	JJ	CHKD	NB

Nicholas Bray Landscapes 471 Argyle Street Moss Vale
PO Box 323 Moss Vale NSW 2577 Australia ABN: 25001055205
M: 0417 278 267 W: www.nicholasbray.net.au E: contact@nicholasbray.net.au

HARDWOOD POSTS WITH COLORBOND CUSTOM ORB ROADSIDE FENCING

OFFSET ALCOVES BETWEEN EXISTING TREES TO BE FILLED WITH PLANTING

SHADED SEATING AREAS ALONG THE CENTRAL ACCESS PATHWAY

LEGEND

- LAWN
- GARDEN BEDS
- PATH
- ROAD
- PAVING
- SITE BOUNDARY
- PROPOSED TREES
- TREES TO BE REMOVED
- TREES TO BE RETAINED
- BENCH SEATING
- PICNIC TABLE SEATING
- ROADSIDE FENCE HARDWOOD POST AND COLORBOND

0 20 30 40 50 60 70 80 90 100m

SCALE 1:600

ISSUE	DATE	REVISION

NOTE DO NOT SCALE FROM DRAWING. USE FIGURED DIMENSIONS ONLY. CHECK ALL DIMENSIONS ON SITE BEFORE ANY MANUFACTURE OR CONSTRUCTION

FILE NAME
NBL_Tamworth_240320.vwx

PROJECT
Workforce Housing

ADDRESS
171-187 Warral Rd,Tamworth,Lt 1/DP611738

CLIENT
Warral Developments

DRAWING
Landscape Layout

Nicholas Bray Landscapes

PROJECT #
NBL_Tamworth_2401

DATE	20/3/24	DWG #	REV
SCALE @ A1	1:650	**L2**	
DRAWN JJ	CHKD NB		

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LEGEND

- LAWN
- GARDEN BEDS
- PATH
- ROAD
- PAVING
- SITE BOUNDARY
- PROPOSED TREES
- TREES TO BE REMOVED
- TREES TO BE RETAINED
- BENCH SEATING
- PICNIC TABLE SEATING

0 20 30 40 50m

SCALE 1:250

ISSUE	DATE	REVISION

NOTE DO NOT SCALE FROM DRAWING. USE FIGURED DIMENSIONS ONLY. CHECK ALL DIMENSIONS ON SITE BEFORE ANY MANUFACTURE OR CONSTRUCTION

FILE NAME
NBL_Tamworth_240320.vwx

PROJECT
Workforce Housing

ADDRESS
171-187 Warral Rd,Tamworth,Lt 1/DP611738

CLIENT
Warral Developments

DRAWING
Community Centre Area Layout

Nicholas Bray Landscapes

PROJECT #
NBL_Tamworth_2401

DATE	DWG #	REV
20/3/24		
SCALE @ A1: 1:250	**L3**	
DRAWN: JJ	CHKD: NB	

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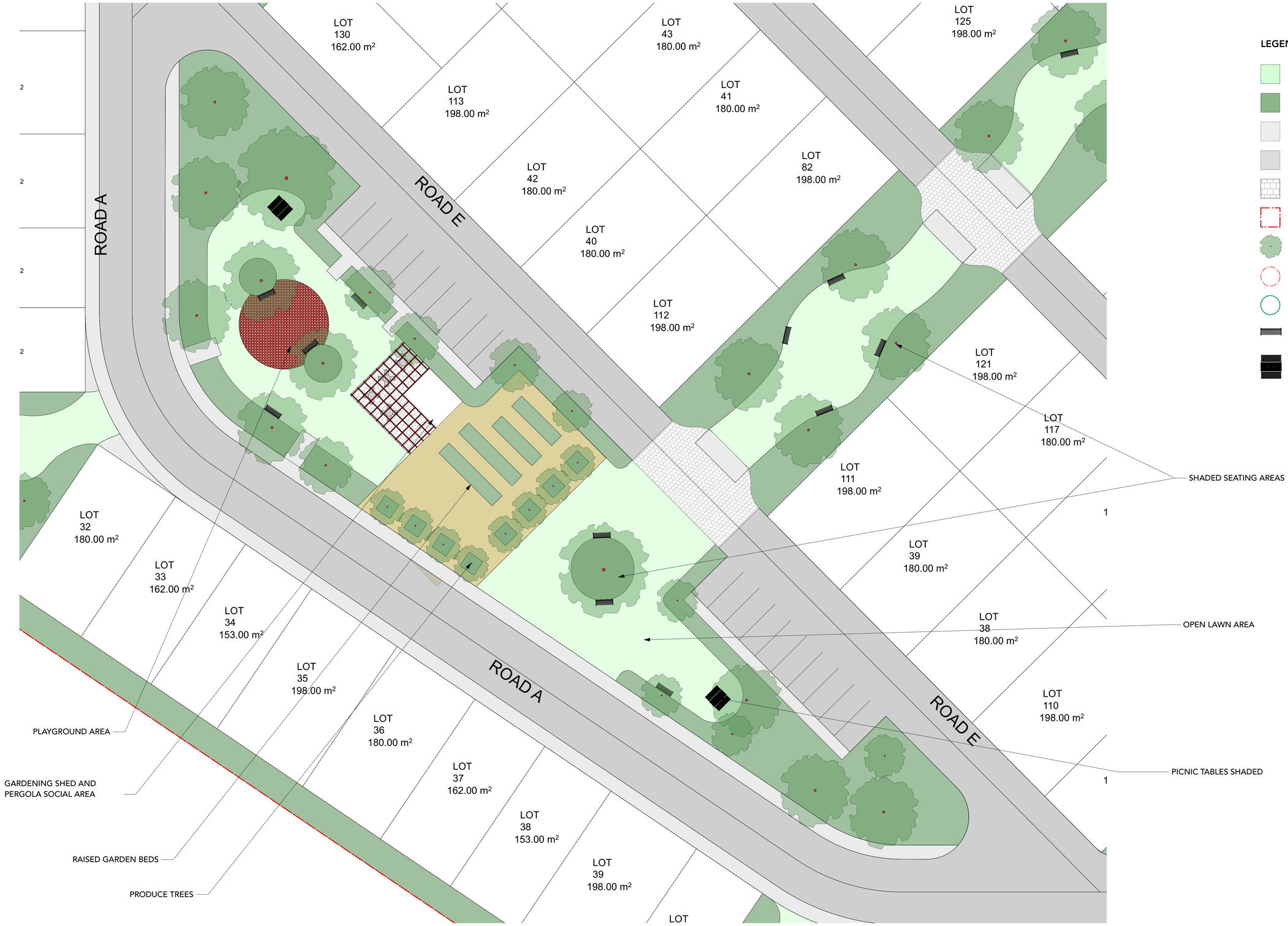

SCALE 1:200

LEGEND

- LAWN
- GARDEN BEDS
- PATH
- ROAD
- PAVING
- SITE BOUNDARY
- PROPOSED TREES
- TREES TO BE REMOVED
- TREES TO BE RETAINED
- BENCH SEATING
- PICNIC TABLE SEATING

ISSUE	DATE	REVISION

NOTE DO NOT SCALE FROM DRAWING. USE FIGURED DIMENSIONS ONLY.
CHECK ALL DIMENSIONS ON SITE BEFORE ANY MANUFACTURE OR CONSTRUCTION

FILE NAME
NBL_Tamworth_240320.vwx

PROJECT
Workforce Housing

ADDRESS
171-187 Warral Rd,Tamworth,Lt 1/DP611738

CLIENT
Warral Developments

DRAWING
Playground & Gardening Area Layout

Nicholas Bray Landscapes

PROJECT #
NBL_Tamworth_2401

DATE	DWG #	REV
20/3/24	**L4**	
SCALE @ A1: **1:200**		
DRAWN: JJ	CHKD: NB	

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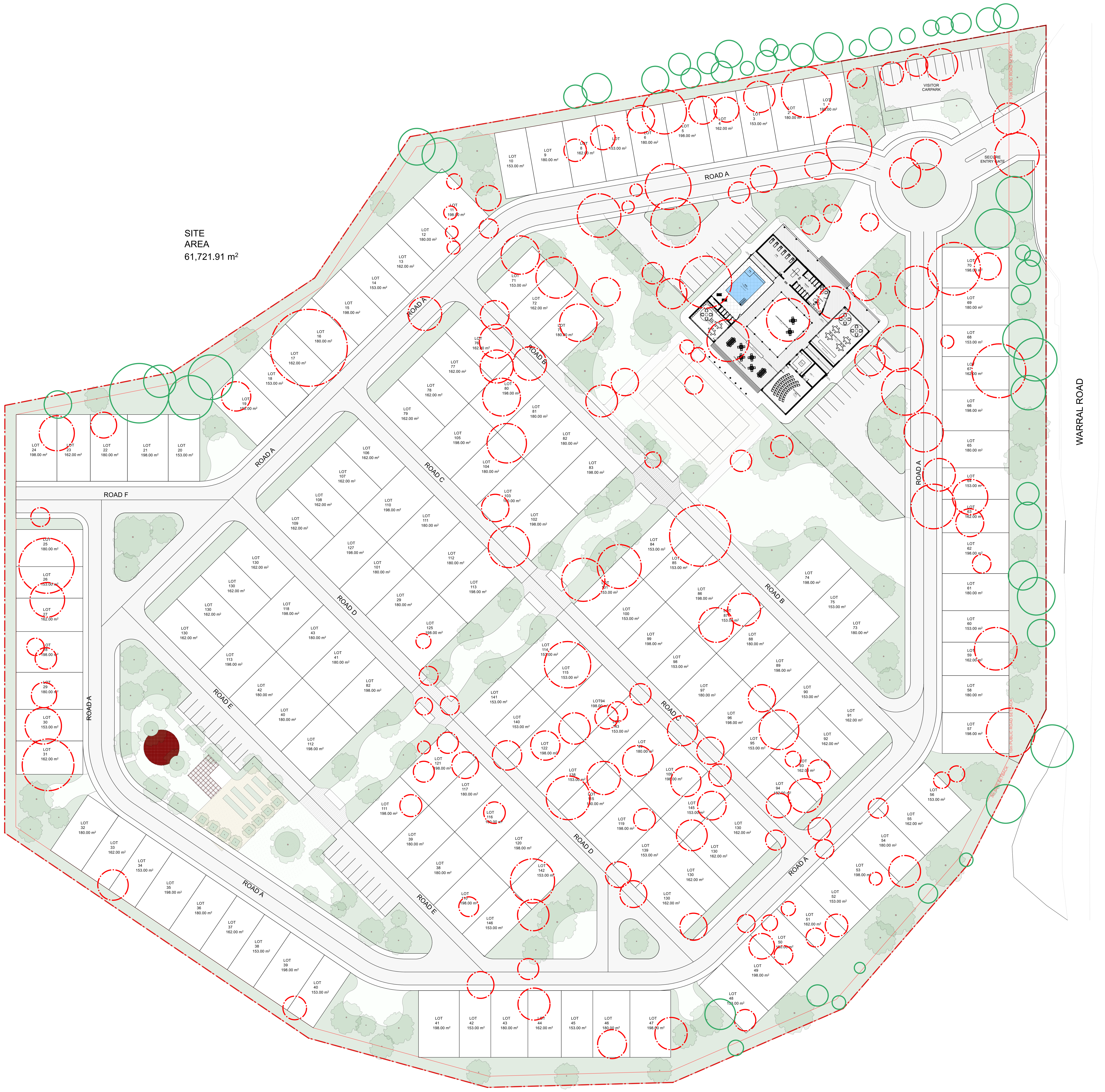
PO Box 323 Moss Vale NSW 2577 Australia ABN: 25001055205
M: 0417 278 267 W: www.nicholasbray.net.au E: contact@nicholasbray.net.au



LEGEND

- LAWN
- GARDEN BEDS
- PATH
- ROAD
- PAVING
- SITE BOUNDARY
- TREES TO BE REMOVED
- TREES TO BE RETAINED
- PROPOSED TREES

0 20 30 40 50 60 70 80 90 100m

SCALE 1:600

ISSUE	DATE	REVISION

NOTE DO NOT SCALE FROM DRAWING. USE FIGURED DIMENSIONS ONLY. CHECK ALL DIMENSIONS ON SITE BEFORE ANY MANUFACTURE OR CONSTRUCTION

FILE NAME
NBL_Tamworth_240320.vwx

PROJECT
Workforce Housing

ADDRESS
171-187 Warral Rd,Tamworth,Lt 1/DP611738

CLIENT
Warral Developments

DRAWING
Trees Retain/Remove

N

Nicholas Bray Landscapes

PROJECT #
NBL_Tamworth_2401

DATE 20/3/24
DWG # **L5**
REV
SCALE @ A1 **1:600**
DRAWN JJ CHKD NB

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471 Argyle Street Moss Vale
ABN: 25001055205
E: contact@nicholasbray.net.au

APPENDIX 2

NOTES:

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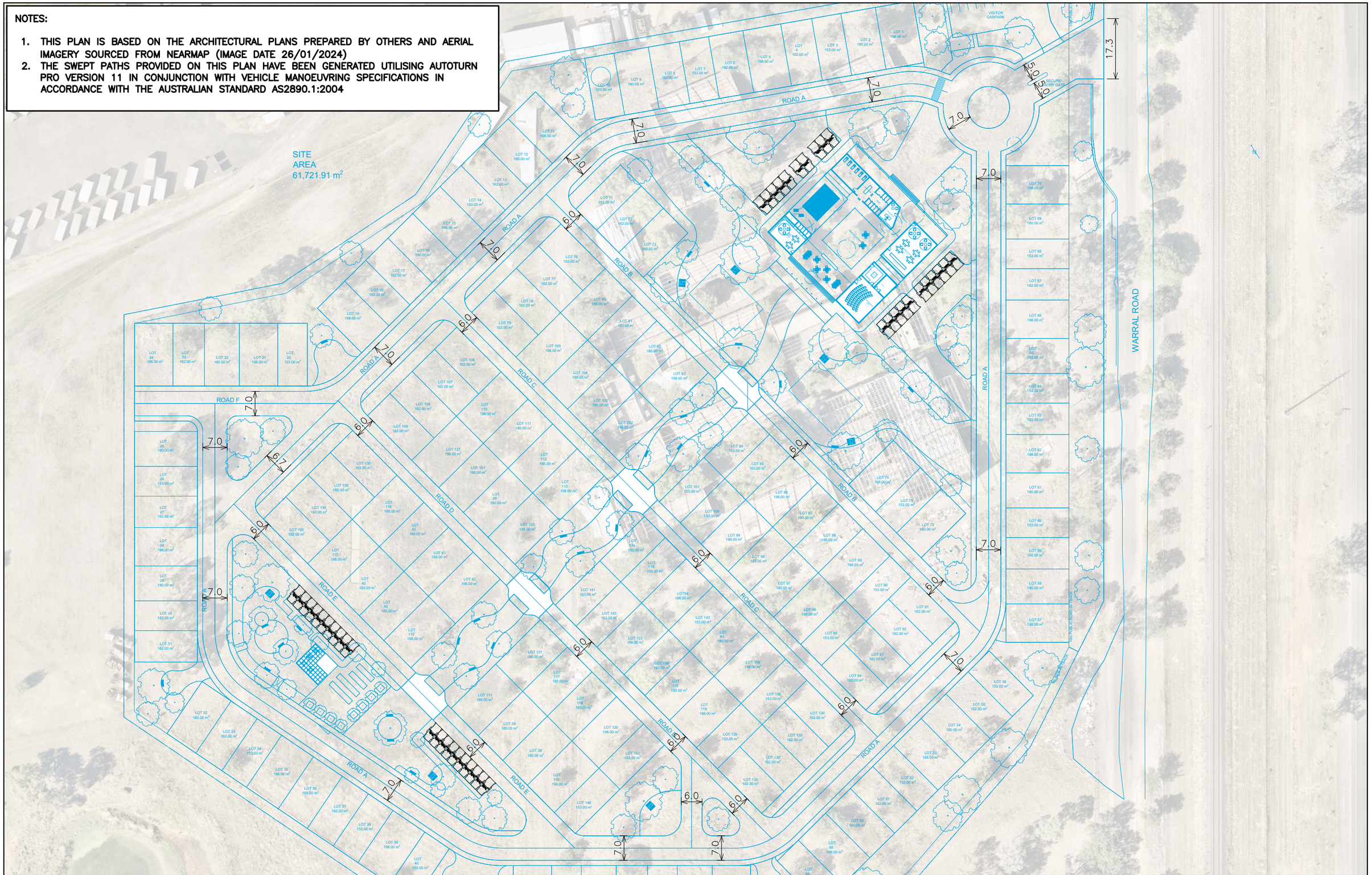
2. THE SWEPT PATHS PROVIDED ON THIS PLAN HAVE BEEN GENERATED UTILISING AUTOTURN PRO VERSION 11 IN CONJUNCTION WITH VEHICLE MANOEUVRING SPECIFICATIONS IN ACCORDANCE WITH THE AUSTRALIAN STANDARD AS2890.1:2004



STANBURY TRAFFIC PLANNING TRAFFIC, PARKING & TRANSPORT CONSULTANTS	ADDRESS: 401/380 HARRIS ST, PYRMONT PH: (02) 8971 8314 EMAIL: info@stanburytraffic.com.au WEBSITE: www.stanburytraffic.com.au	STANBURY TRAFFIC PLANNING 171–187 WARRAL ROAD, TAMWORTH – OPTION 1 CAR PARK COMPLIANCE REVIEW CONCEPT LAYOUT GROUND	SCALE 0 10.0 20.0 1:1000@A3 DRAWING NO. 23–186–01–V1 DATE 20 February 2024	CREATED BY Y.H APPROVED BY M.S SHEET 01 / 16

NOTES:

1. THIS PLAN IS BASED ON THE ARCHITECTURAL PLANS PREPARED BY OTHERS AND AERIAL IMAGERY SOURCED FROM NEARMAP (IMAGE DATE 26/01/2024)
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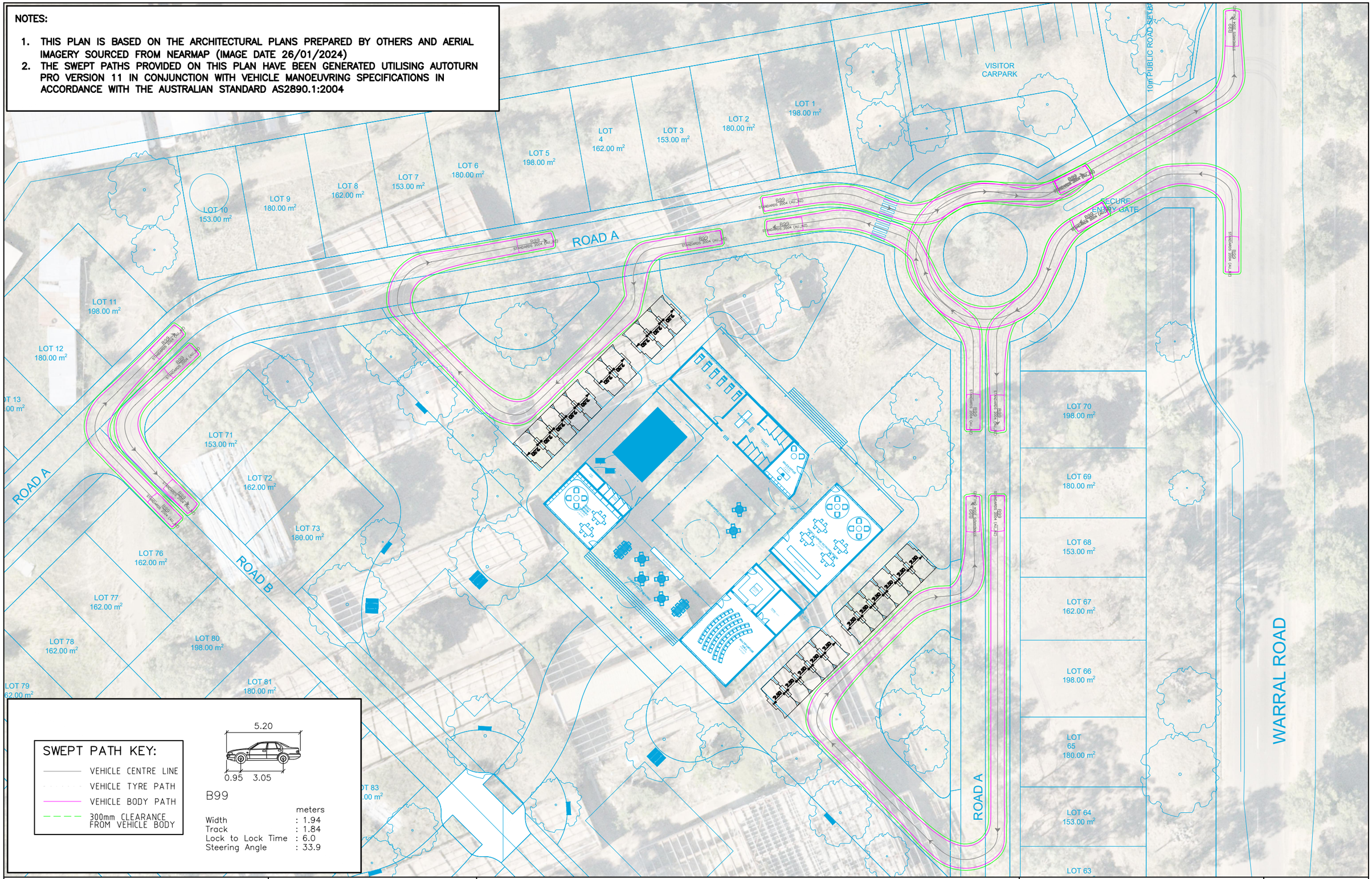

SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

B99

	meters
Width	: 1.94
Track	: 1.84
Lock to Lock Time	: 6.0
Steering Angle	: 33.9

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STANBURY TRAFFIC PLANNING

171–187 WARRAL ROAD, TAMWORTH – OPTION 1
CAR PARK COMPLIANCE REVIEW
SWEPT PATH ASSESSMENT
GROUND

SCALE	0 5.0 10.0 1:500@A3	CREATED BY Y.H
DRAWING NO.	23–186–01–V1	APPROVED BY M.S
DATE	20 February 2024	SHEET 02 / 16

NOTES:

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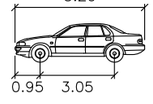
ROAD C

ROAD A

ROAD B

SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY



B99

	meters
Width	: 1.94
Track	: 1.84
Lock to Lock Time	: 6.0
Steering Angle	: 33.9

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STANBURY TRAFFIC PLANNING

171–187 WARRAL ROAD, TAMWORTH – OPTION 1
CAR PARK COMPLIANCE REVIEW
SWEPT PATH ASSESSMENT
GROUND

SCALE	0 5.0 10.0 1:500@A3	CREATED BY Y.H
DRAWING NO.	23–186–01–V1	APPROVED BY M.S
DATE	20 February 2024	SHEET 03 / 16

NOTES:

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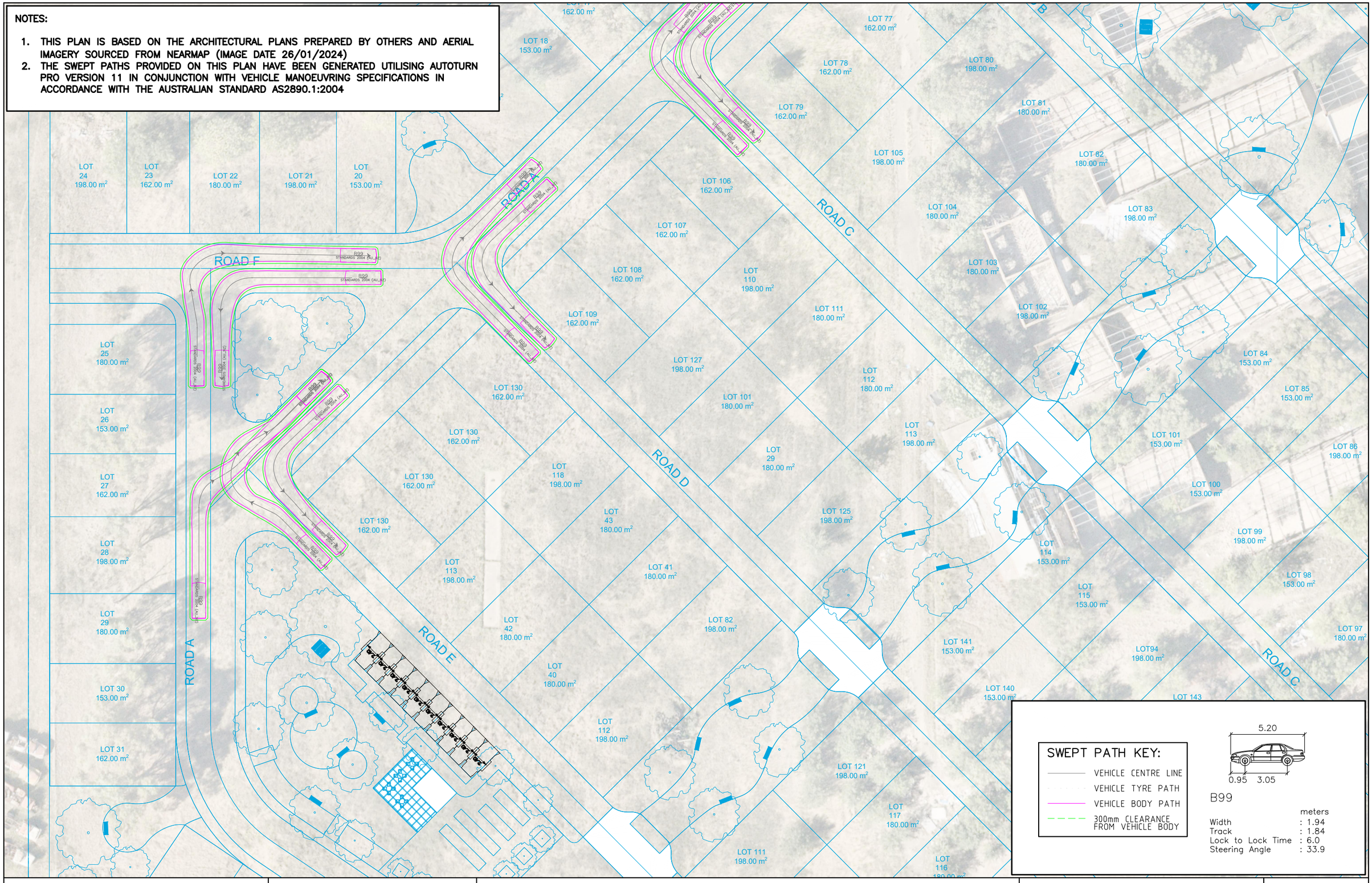

SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

B99

	meters
Width	: 1.94
Track	: 1.84
Lock to Lock Time	: 6.0
Steering Angle	: 33.9

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171–187 WARRAL ROAD, TAMWORTH – OPTION 1
CAR PARK COMPLIANCE REVIEW
SWEPT PATH ASSESSMENT
GROUND

SCALE	0 5.0 10.0 1:500@A3	CREATED BY Y.H
DRAWING NO.	23–186–01–V1	APPROVED BY M.S
DATE	20 February 2024	SHEET 04 / 16

NOTES:

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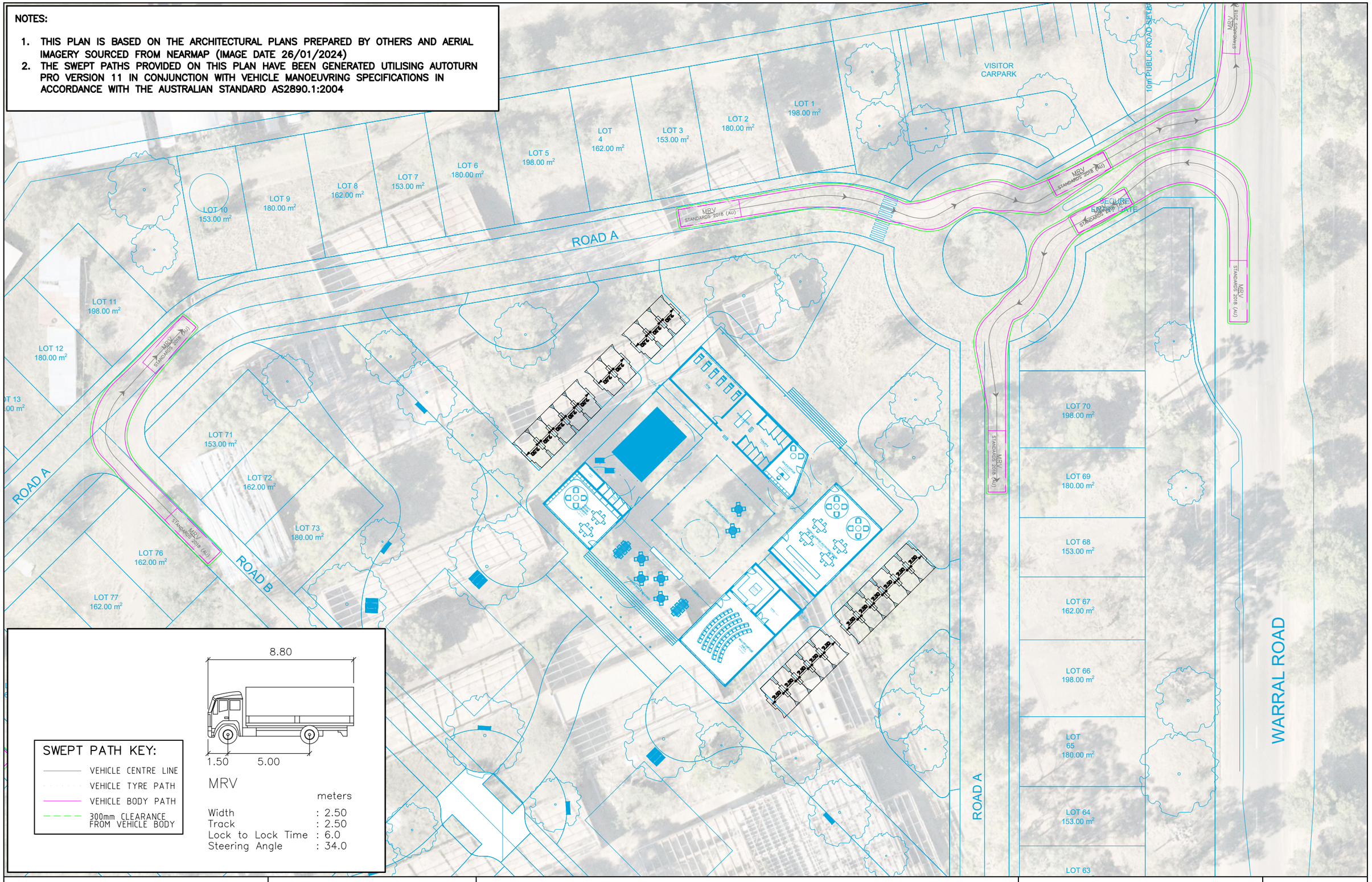

SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

MRV

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 34.0

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171–187 WARRAL ROAD, TAMWORTH – OPTION 1
CAR PARK COMPLIANCE REVIEW
SWEPT PATH ASSESSMENT
GROUND

SCALE	0 5.0 10.0 1:500@A3	CREATED BY Y.H
DRAWING NO.	23–186–01–V1	APPROVED BY M.S
DATE	20 February 2024	SHEET 05 / 16

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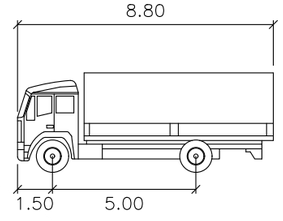
ROAD C
ROAD D
ROAD E
ROAD A
MRV STANDARDS 2018 (AU)



SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

MRV

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 34.0

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171–187 WARRAL ROAD, TAMWORTH – OPTION 1
CAR PARK COMPLIANCE REVIEW
SWEPT PATH ASSESSMENT
GROUND

SCALE	0 5.0 10.0 1:500@A3	CREATED BY	Y.H
DRAWING NO.	23–186–01–V1	APPROVED BY	M.S
DATE	20 February 2024	SHEET	06 / 16

NOTES:

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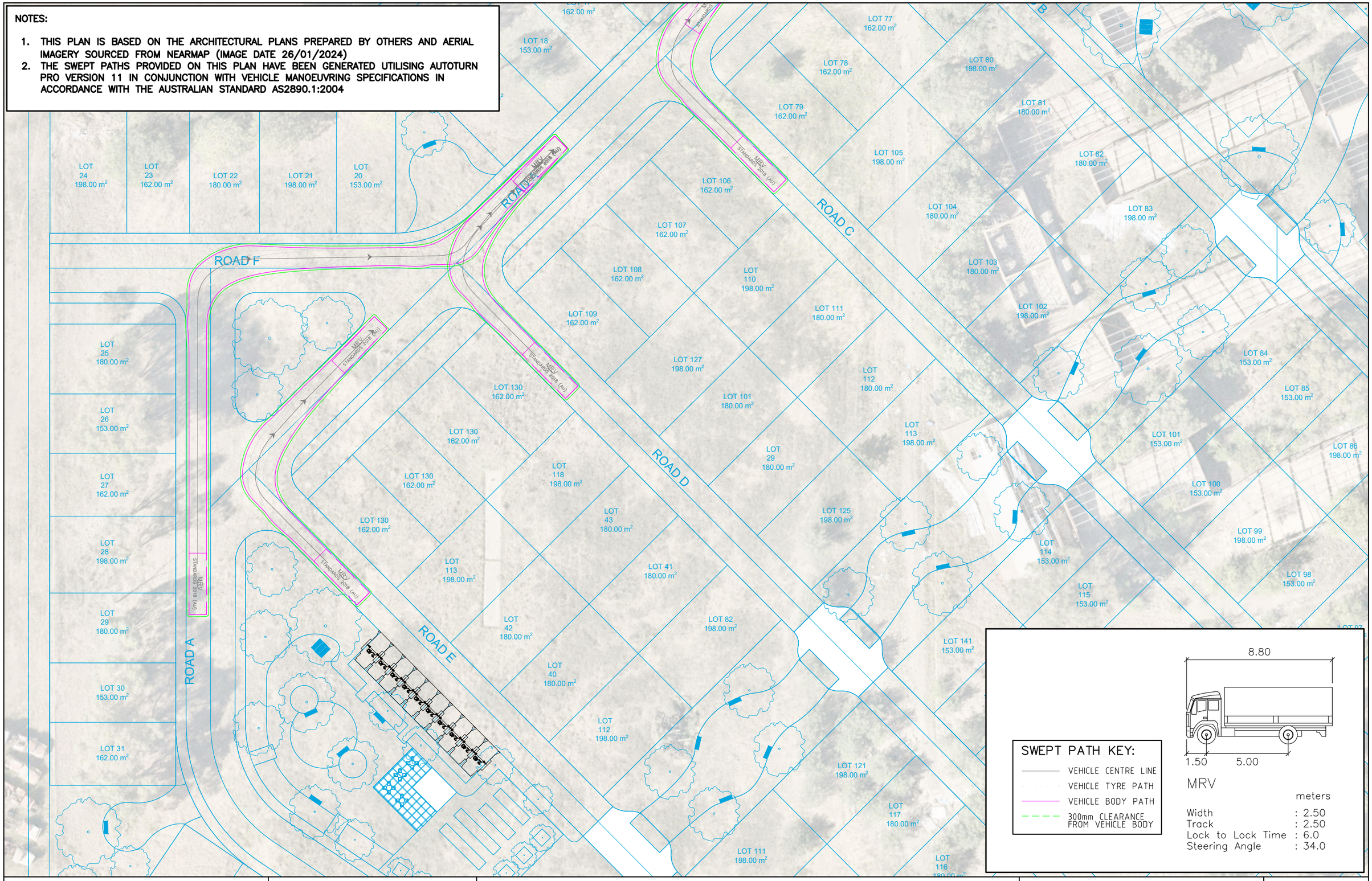

SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

MRV

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 34.0

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STANBURY TRAFFIC PLANNING

171–187 WARRAL ROAD, TAMWORTH – OPTION 1
CAR PARK COMPLIANCE REVIEW
SWEPT PATH ASSESSMENT
GROUND

SCALE 0 5.0 10.0	1:500@A3	CREATED BY Y.H
DRAWING NO.	23–186–01–V1	APPROVED BY M.S
DATE	20 February 2024	SHEET 07 / 16

NOTES:

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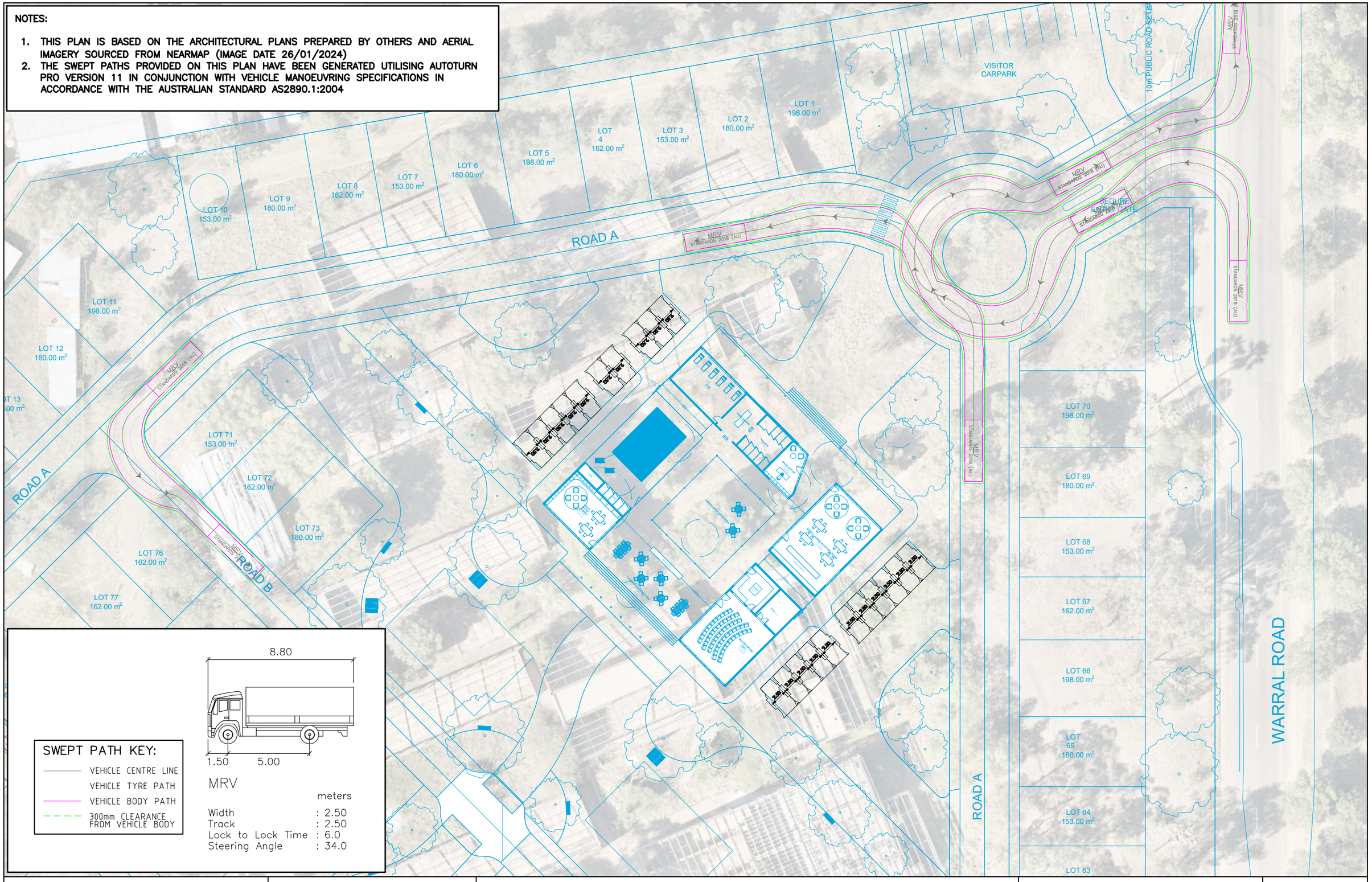

SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

MRV

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 34.0

STANBURY TRAFFIC PLANNING
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STANBURY TRAFFIC PLANNING

171–187 WARRAL ROAD, TAMWORTH – OPTION 1
CAR PARK COMPLIANCE REVIEW
SWEPT PATH ASSESSMENT
GROUND

SCALE	0 5.0 10.0 1:500@A3
DRAWING NO.	23–186–01–V1
DATE	20 February 2024
CREATED BY	Y.H
APPROVED BY	M.S
SHEET	08 / 16

NOTES:

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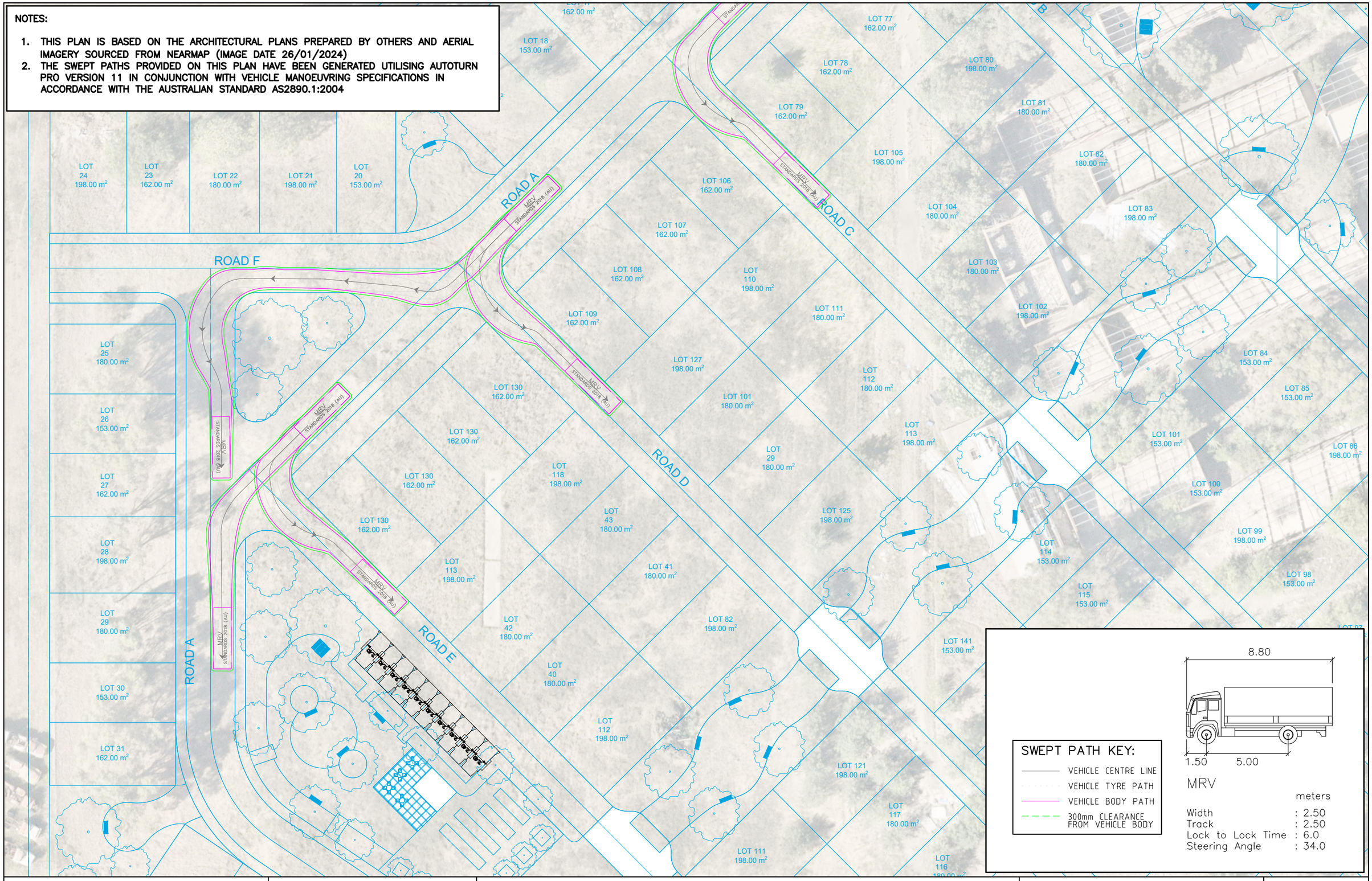

SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

MRV

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 34.0

STANBURY TRAFFIC PLANNING
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STANBURY TRAFFIC PLANNING

171–187 WARRAL ROAD, TAMWORTH – OPTION 1
CAR PARK COMPLIANCE REVIEW
SWEPT PATH ASSESSMENT
GROUND

SCALE	0 5.0 10.0 1:500@A3	CREATED BY	Y.H
DRAWING NO.	23–186–01–V1	APPROVED BY	M.S
DATE	20 February 2024	SHEET	09 / 16

NOTES:

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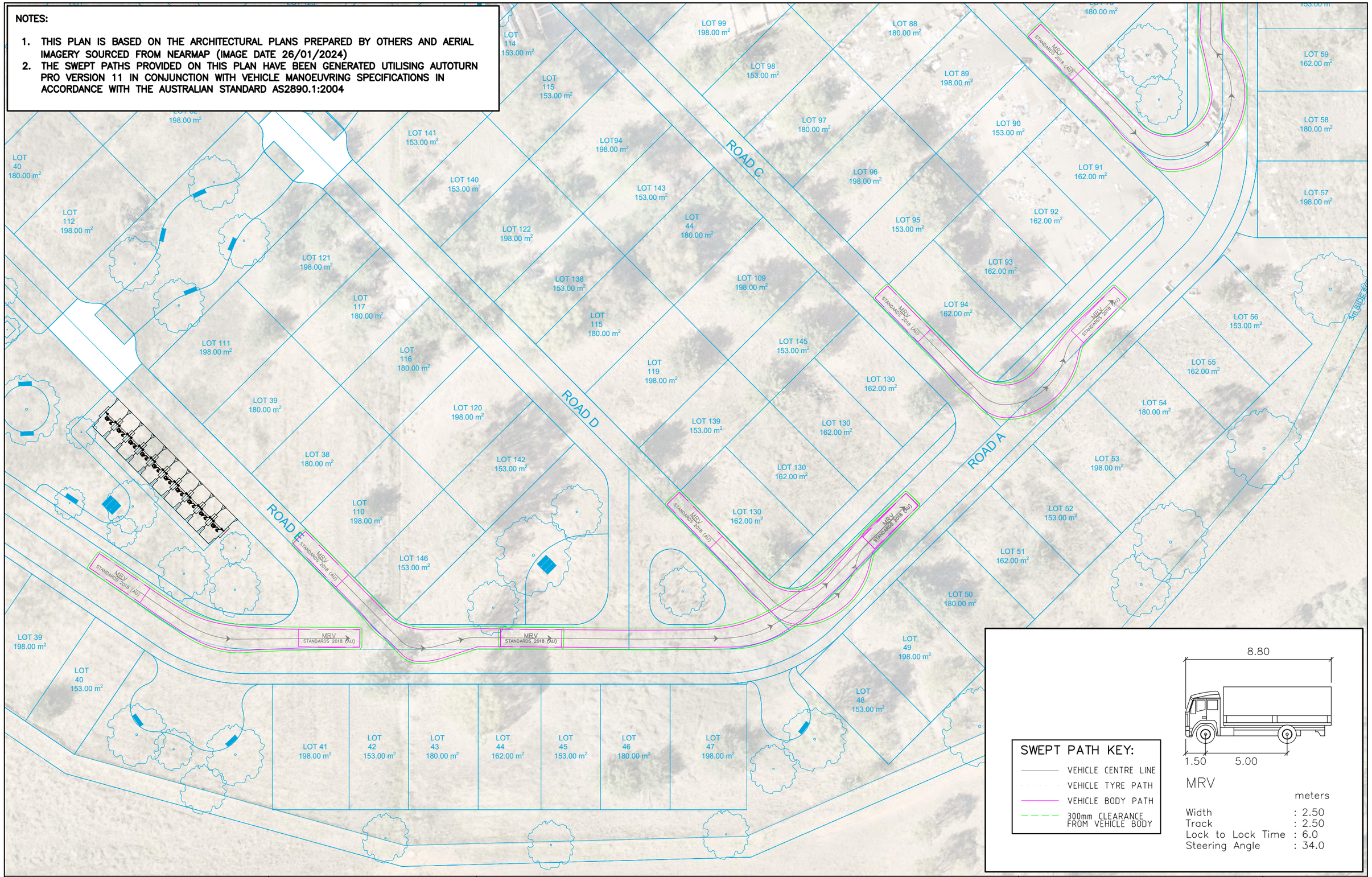

SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

MRV

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 34.0

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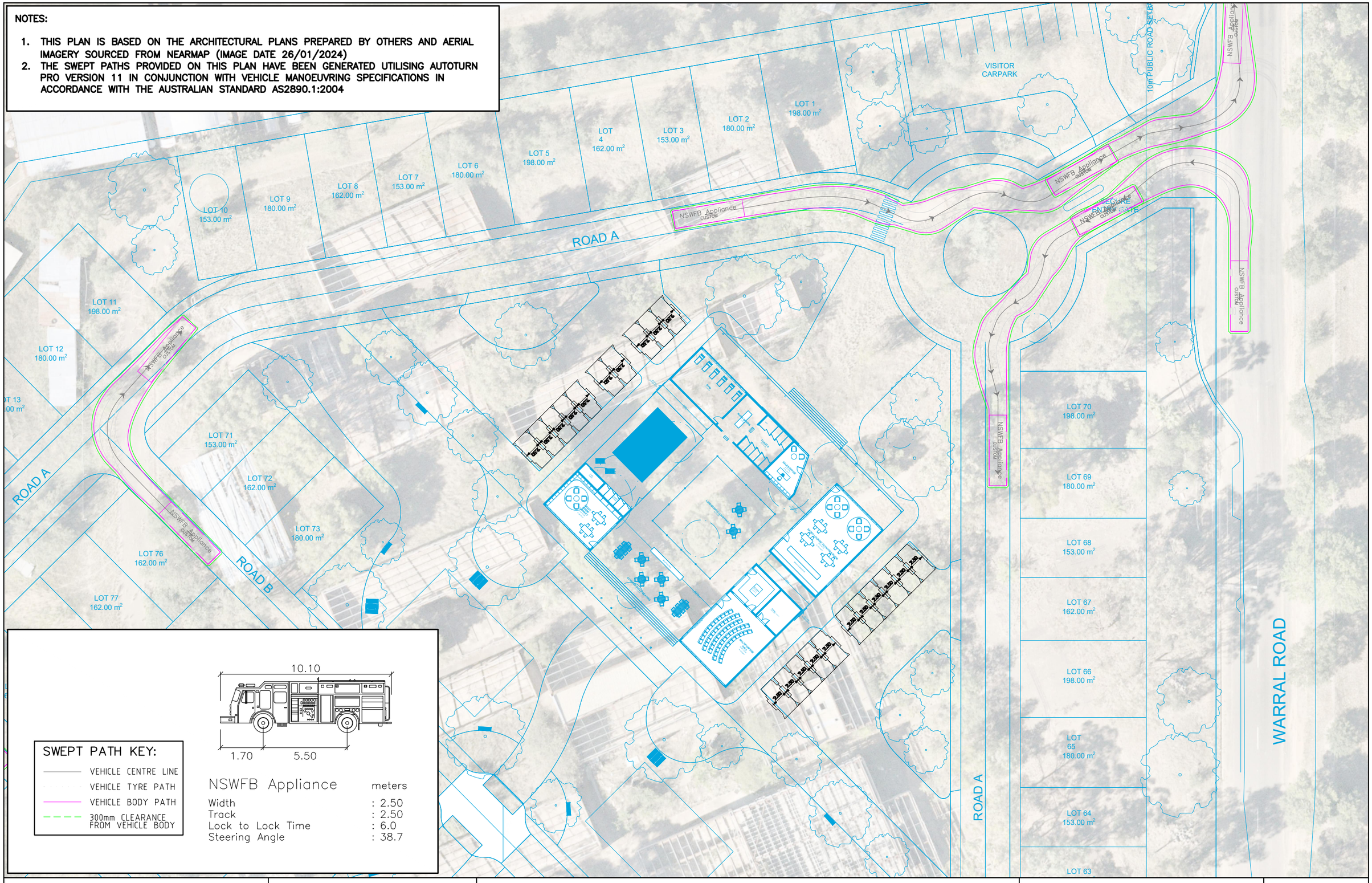
STANBURY TRAFFIC PLANNING

171–187 WARRAL ROAD, TAMWORTH – OPTION 1
CAR PARK COMPLIANCE REVIEW
SWEPT PATH ASSESSMENT
GROUND

SCALE 0 5.0 10.0	1:500@A3	CREATED BY Y.H
DRAWING NO.	23–186–01–V1	APPROVED BY M.S
DATE	20 February 2024	SHEET 10 / 16

NOTES:

1. THIS PLAN IS BASED ON THE ARCHITECTURAL PLANS PREPARED BY OTHERS AND AERIAL IMAGERY SOURCED FROM NEARMAP (IMAGE DATE 26/01/2024)
2. THE SWEPT PATHS PROVIDED ON THIS PLAN HAVE BEEN GENERATED UTILISING AUTOTURN PRO VERSION 11 IN CONJUNCTION WITH VEHICLE MANOEUVRING SPECIFICATIONS IN ACCORDANCE WITH THE AUSTRALIAN STANDARD AS2890.1:2004



STANBURY TRAFFIC PLANNING
TRAFFIC, PARKING & TRANSPORT CONSULTANTS

ADDRESS: 401/380 HARRIS ST, PYRMONT
PH: (02) 8971 8314
EMAIL: info@stanburytraffic.com.au
WEBSITE: www.stanburytraffic.com.au

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CAR PARK COMPLIANCE REVIEW
SWEPT PATH ASSESSMENT
GROUND

SCALE 0 5.0 10.0 1:500@A3		CREATED BY Y.H
DRAWING NO. 23–186–01–V1		APPROVED BY M.S
DATE 20 February 2024		SHEET 11 / 16

NOTES:

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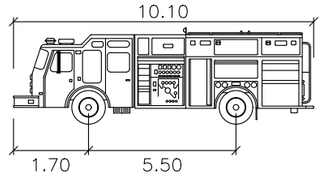
ROAD C
ROAD D
ROAD E
ROAD A

NSWFB Appliance CUSTOM

SWEPT PATH KEY:
- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY



NSWFB Appliance — meters

Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 38.7

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171–187 WARRAL ROAD, TAMWORTH – OPTION 1
CAR PARK COMPLIANCE REVIEW
SWEPT PATH ASSESSMENT
GROUND

SCALE	0 5.0 10.0 1:500@A3	CREATED BY Y.H
DRAWING NO.	23–186–01–V1	APPROVED BY M.S
DATE	20 February 2024	SHEET 12 / 16

NOTES:

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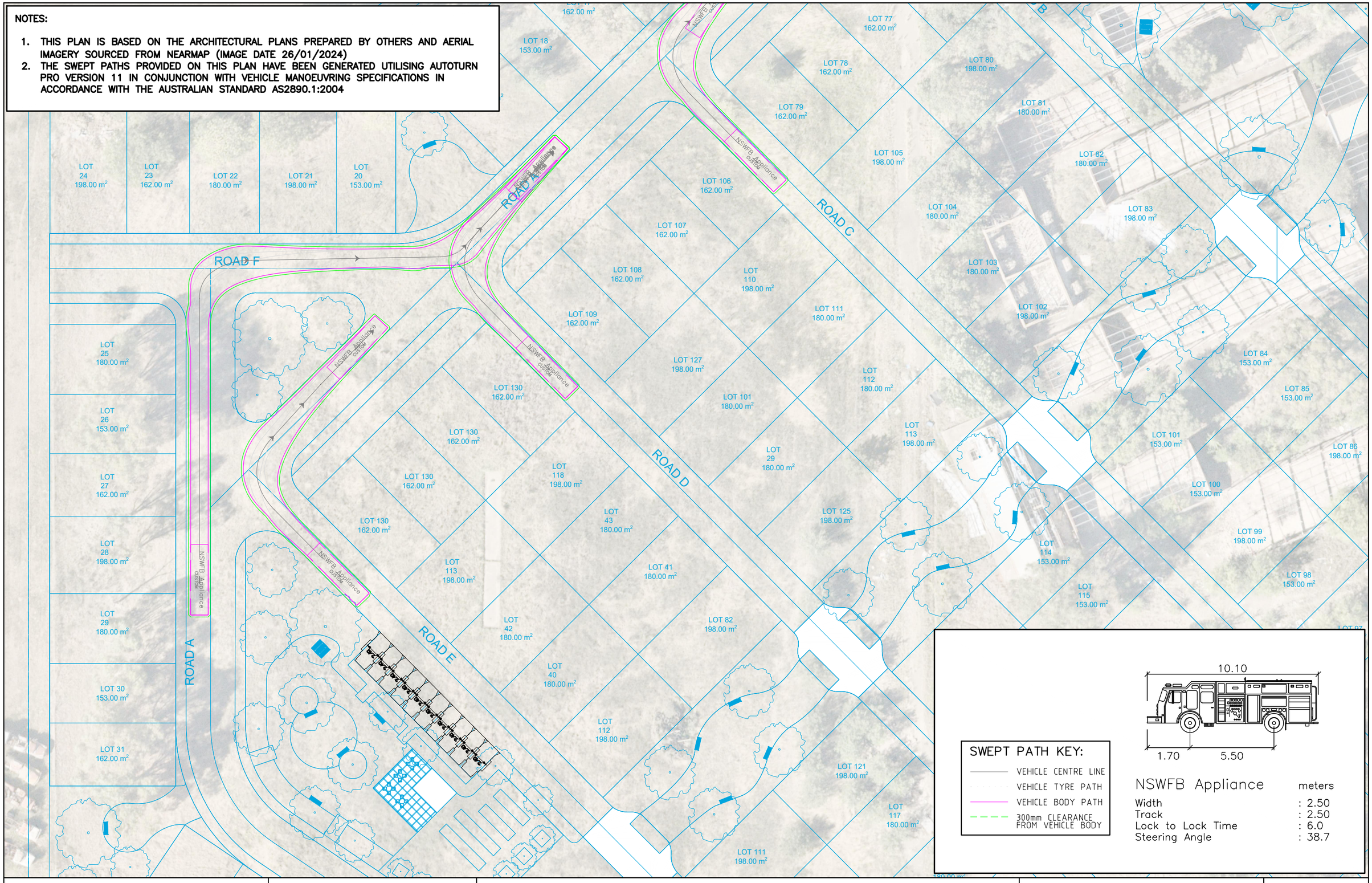

SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

NSWFB Appliance

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 38.7

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171–187 WARRAL ROAD, TAMWORTH – OPTION 1
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SWEPT PATH ASSESSMENT
GROUND

SCALE 0 5.0 10.0	1:500@A3	CREATED BY Y.H
DRAWING NO.	23–186–01–V1	APPROVED BY M.S
DATE	20 February 2024	SHEET 13 / 16

NOTES:

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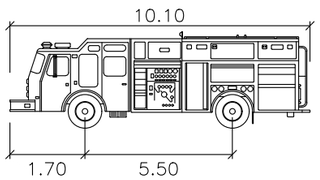
SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY



NSWFB Appliance	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 38.7

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SWEPT PATH ASSESSMENT
GROUND

SCALE 0 5.0 10.0 1:500@A3	CREATED BY Y.H
DRAWING NO. 23–186–01–V1	APPROVED BY M.S
DATE 20 February 2024	SHEET 14 / 16

NOTES:

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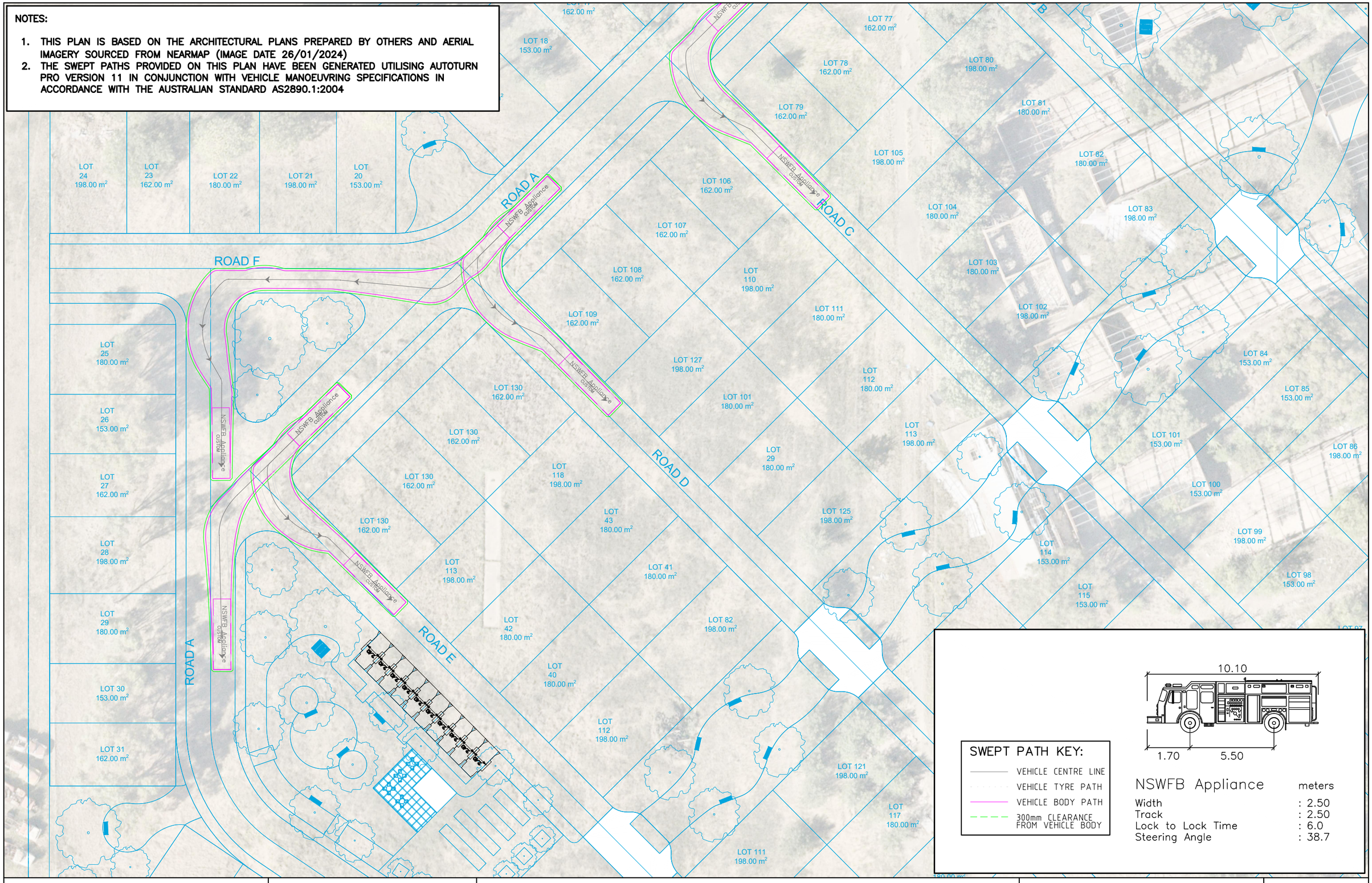

SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

NSWFB Appliance — meters

Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 38.7

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171–187 WARRAL ROAD, TAMWORTH – OPTION 1
CAR PARK COMPLIANCE REVIEW
SWEPT PATH ASSESSMENT
GROUND

SCALE 0 5.0 10.0	1:500@A3	CREATED BY Y.H
DRAWING NO.	23–186–01–V1	APPROVED BY M.S
DATE	20 February 2024	SHEET 15 / 16

NOTES:

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ROAD C
ROAD D
ROAD E
ROAD A
NSWFB Appliance CUSTOM

SWEPT PATH KEY:

- VEHICLE CENTRE LINE
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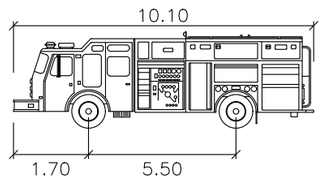

NSWFB Appliance — meters

Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 38.7

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171–187 WARRAL ROAD, TAMWORTH – OPTION 1
CAR PARK COMPLIANCE REVIEW
SWEPT PATH ASSESSMENT
GROUND

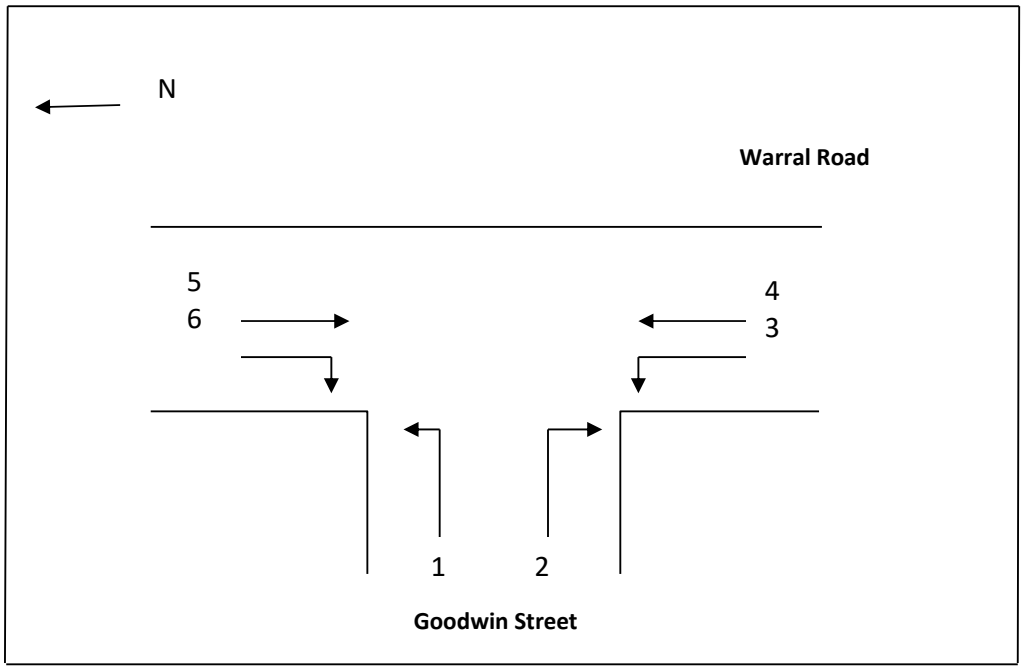
SCALE 0 5.0 10.0	1:500@A3	CREATED BY Y.H
DRAWING NO.	23–186–01–V1	APPROVED BY M.S
DATE	20 February 2024	SHEET 16 / 16

APPENDIX 3

STANBURY TRAFFIC PLANNING
TRAFFIC, PARKING & TRANSPORT CONSULTANTS

TRAFFIC COUNTS AT: Warral Road and Goodwin Street, West Tamworth
DATE: 29th February 2024
TIME: 7:00am to 10:00am and 3:00pm to 6:00pm

Time	Direction of Vehicular Traffic					
	1	2	3	4	5	6
7.00 – 7.15am	7	1	0	20	3	0
7.15 – 7.30am	8	1	0	18	4	0
7.30 – 7.45am	7	0	0	19	2	0
7.45 – 8.00am	5	0	0	24	2	1
TOTAL	**27**	**2**	**0**	**81**	**11**	**1**
8.00 – 8.15am	3	1	0	20	1	1
8.15 – 8.30am	4	1	0	14	2	1
8.30 – 8.45am	1	1	1	19	4	2
8.45 – 9.00am	2	0	0	16	3	1
TOTAL	**10**	**3**	**1**	**69**	**10**	**5**
9.00 -9.15am	1	0	0	10	2	2
9:15 – 9:30am	0	0	0	6	3	2
9.30 – 9:45am	0	0	0	5	2	0
9.45 – 10.00am	1	0	0	5	1	1
TOTAL	**2**	**0**	**0**	**26**	**8**	**5**
3.00 – 3.15pm	4	0	0	5	12	5
3.15 – 3.30pm	2	0	0	6	14	4
3.30 – 3.45pm	3	1	0	7	10	4
3.45 – 4.00pm	3	0	0	6	11	3
TOTAL	**12**	**1**	**0**	**24**	**47**	**16**
4.00 – 4.15pm	2	0	0	6	11	3
4.15 – 4.30pm	2	0	1	5	12	2
4.30 – 4.45pm	1	0	1	8	14	0
4.45 – 5.00pm	3	0	0	6	13	1
TOTAL	**8**	**0**	**2**	**25**	**50**	**6**
5.00 – 5.15pm	2	0	0	3	7	3
5.15 – 5.30pm	1	0	0	2	9	2
5.30 – 5.45pm	0	1	0	1	7	1
5.45 – 6.00pm	0	0	1	1	4	0
TOTAL	**3**	**1**	**1**	**7**	**27**	**6**


N
Warral Road
5
6
4
3
1
2
Goodwin Street

APPENDIX 4

MOVEMENT SUMMARY

Site: 101 [Warral Road and Goodwin Street am existing (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Warral Road and Goodwin Street am existing
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Warral Road															
1	L2	All MCs	1	0.0	1	0.0	0.044	5.6	LOS A	0.0	0.0	0.00	0.01	0.00	57.4
2	T1	All MCs	85	0.0	85	0.0	0.044	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.9
Approach			86	0.0	86	0.0	0.044	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.9
North: Warral Road															
8	T1	All MCs	12	5.0	12	5.0	0.007	0.0	LOS A	0.0	0.0	0.03	0.06	0.03	59.4
9	R2	All MCs	1	0.0	1	0.0	0.007	5.6	LOS A	0.0	0.0	0.03	0.06	0.03	56.6
Approach			13	4.6	13	4.6	0.007	0.5	NA	0.0	0.0	0.03	0.06	0.03	59.1
West: Goodwin Street															
10	L2	All MCs	28	0.0	28	0.0	0.020	5.8	LOS A	0.1	0.6	0.17	0.54	0.17	52.4
12	R2	All MCs	2	0.0	2	0.0	0.020	5.8	LOS A	0.1	0.6	0.17	0.54	0.17	52.1
Approach			31	0.0	31	0.0	0.020	5.8	LOS A	0.1	0.6	0.17	0.54	0.17	52.4
All Vehicles			129	0.4	129	0.4	0.044	1.5	NA	0.1	0.6	0.04	0.14	0.04	57.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Warral Road and Goodwin Street pm existing (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Warral Road and Goodwin Street pm existing
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Warral Road															
1	L2	All MCs	1	0.0	1	0.0	0.014	5.5	LOS A	0.0	0.0	0.00	0.02	0.00	57.3
2	T1	All MCs	25	0.0	25	0.0	0.014	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.8
Approach			26	0.0	26	0.0	0.014	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.7
North: Warral Road															
8	T1	All MCs	49	5.0	49	5.0	0.036	0.0	LOS A	0.1	0.7	0.05	0.15	0.05	58.4
9	R2	All MCs	17	0.0	17	0.0	0.036	5.5	LOS A	0.1	0.7	0.05	0.15	0.05	55.7
Approach			66	3.7	66	3.7	0.036	1.4	NA	0.1	0.7	0.05	0.15	0.05	57.7
West: Goodwin Street															
10	L2	All MCs	13	0.0	13	0.0	0.009	5.6	LOS A	0.0	0.2	0.08	0.55	0.08	52.6
12	R2	All MCs	1	0.0	1	0.0	0.009	5.7	LOS A	0.0	0.2	0.08	0.55	0.08	52.4
Approach			14	0.0	14	0.0	0.009	5.6	LOS A	0.0	0.2	0.08	0.55	0.08	52.6
All Vehicles			106	2.3	106	2.3	0.036	1.7	NA	0.1	0.7	0.04	0.17	0.04	57.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

APPENDIX 5

MOVEMENT SUMMARY

Site: 101 [Warral Road and Goodwin Street am projected (Site Folder: General - Copy)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Warral Road and Goodwin Street am projected
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Warral Road															
1	L2	All MCs	1	0.0	1	0.0	0.069	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	57.4
2	T1	All MCs	134	0.0	134	0.0	0.069	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach			135	0.0	135	0.0	0.069	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
North: Warral Road															
8	T1	All MCs	24	5.0	24	5.0	0.013	0.0	LOS A	0.0	0.0	0.02	0.03	0.02	59.7
9	R2	All MCs	1	0.0	1	0.0	0.013	5.6	LOS A	0.0	0.0	0.02	0.03	0.02	56.9
Approach			25	4.8	25	4.8	0.013	0.2	NA	0.0	0.0	0.02	0.03	0.02	59.5
West: Goodwin Street															
10	L2	All MCs	28	0.0	28	0.0	0.021	5.9	LOS A	0.1	0.6	0.22	0.54	0.22	52.2
12	R2	All MCs	2	0.0	2	0.0	0.021	6.0	LOS A	0.1	0.6	0.22	0.54	0.22	52.0
Approach			31	0.0	31	0.0	0.021	5.9	LOS A	0.1	0.6	0.22	0.54	0.22	52.2
All Vehicles			191	0.6	191	0.6	0.069	1.0	NA	0.1	0.6	0.04	0.09	0.04	58.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Warral Road and Goodwin Street pm projected (Site Folder: General - Copy)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Warral Road and Goodwin Street pm projected
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Warral Road															
1	L2	All MCs	1	0.0	1	0.0	0.020	5.5	LOS A	0.0	0.0	0.00	0.02	0.00	57.4
2	T1	All MCs	38	0.0	38	0.0	0.020	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.8
Approach			39	0.0	39	0.0	0.020	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.8
North: Warral Road															
8	T1	All MCs	98	5.0	98	5.0	0.062	0.0	LOS A	0.1	0.7	0.04	0.09	0.04	59.0
9	R2	All MCs	17	0.0	17	0.0	0.062	5.5	LOS A	0.1	0.7	0.04	0.09	0.04	56.3
Approach			115	4.3	115	4.3	0.062	0.8	NA	0.1	0.7	0.04	0.09	0.04	58.6
West: Goodwin Street															
10	L2	All MCs	13	0.0	13	0.0	0.009	5.6	LOS A	0.0	0.2	0.11	0.54	0.11	52.6
12	R2	All MCs	1	0.0	1	0.0	0.009	5.9	LOS A	0.0	0.2	0.11	0.54	0.11	52.3
Approach			14	0.0	14	0.0	0.009	5.7	LOS A	0.0	0.2	0.11	0.54	0.11	52.5
All Vehicles			167	2.9	167	2.9	0.062	1.1	NA	0.1	0.7	0.04	0.11	0.04	58.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.